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KEPLINGER TECHNOLOGY CONSULTANTS, INC.
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-551-CT4-340087

REPORT TO THE DIRECTOR
EVALUATION OF THE KGS AND DRAINAGE PROGRAMS
VOLUME I - MANAGEMENT SUMMARY

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KEPLINGER TECHNOLOGY CONSULTANTS, INC.
International Energy Consultants

A Keplinger Company

September 1, 1985

Mr. Robert Burford, Director
U.S. Department of the Interior/Bureau of
Land Management
18th & C Streets NW
Washington, DC 20240

Re: Contract No. YA-551-CT4-340087
Report to the Director

Dear Mr. Burford:

Keplinger Technology Consultants, Inc. (KTCI) is pleased to submit to you our evaluation of the current management of the Known Geologic Structure (KGS) determination and drainage identification programs of the Bureau of Land Management (BLM). In accordance with your directive, KTCI is herewith providing a complete and candid statement of our findings and specific recommendations for improvement within these programs.

It is noteworthy that, during the conduct of this project, we found significant responsiveness by BLM local staff to our suggestions and observed ongoing efforts on their part to make program and data base improvements when deficiencies were noted. A considerable number of the deficiencies discussed in this report have already been corrected.

KTCI wishes to acknowledge the assistance and cooperation received by our staff from the BLM staff, particularly from Larry Godwin, the Contracting Officer's Representative on this project. We have appreciated this opportunity to be of service to the Bureau.

Respectfully submitted,

KEPLINGER TECHNOLOGY CONSULTANTS, INC.

William J. McAdams

William J. McAdams
President

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REPORT TO THE DIRECTOR
MANAGEMENT SUMMARY OF KGS AND DRAINAGE PROGRAMS

1.0 Executive Summary

1.1 Project Background

Keplinger Technology Consultants, Inc. (KTCI) has been retained by the U.S. Department of the Interior/Bureau of Land Management (BLM) to perform an evaluation of the BLM's Known Geologic Structure (KGS) determination program and its drainage identification program. In accordance with the terms of contract number YA-551-CT4-340087, KTCI has performed the following four tasks:

- Identification and evaluation of deficiencies in the oil and gas records data base, as it relates to the KGS and drainage programs, in 17 BLM District and State Offices.
- Preparation of KGS reports in the Casper District Office, Montana State Office and Colorado State Office.
- Review of field maps and the oil and gas data base for identification of potential drainage situations in 15 BLM District Offices.
- Preparation of evaluation reports on the management of KGS and drainage programs in 17 District and State Offices and preparation of a Report to the Director of the BLM on the current status of these two programs with recommendations for improvements.

1.2 Summary of Project Implementation

Exhibit 1 lists the BLM offices visited by KTCI personnel. This report summarizes KTCI's findings concerning the KGS and drainage programs and recommends ways to make the two programs more effective.

As part of the contract, KTCI accomplished the following:

- Evaluated and prepared individual reports on the oil and gas data bases in 17 District and State Offices.
- Prepared 41 KGS reports adding 329,177 acres to defined KGS areas.
- Reviewed 4,619 wells in 12 District Offices, identifying 880 potentially offending wells and 476 potentially offended leases under Federal jurisdiction.
- Evaluated and prepared individual reports on the management of the KGS and drainage programs in 17 District and State Offices.

- Conducted closeout sessions with management in each of the 17 offices.

Field work on the project commenced with a pre-work conference in Casper on September 4-5, 1984, and proceeded continuously until the final office closeout with management at the Bakersfield District Office on June 27, 1985.

1.3 Major Findings

Based upon our evaluation of the data base, interviews with personnel involved in the various offices and preparation of KGS and drainage work products, we found the following:

- With several notable exceptions, requirements of both the KGS and drainage programs tend to be subordinated to "demand" workload requirements.

- There is a significant backlog of KGS work in many offices which, at current staffing levels, will not be eliminated in the foreseeable future.

- There is an undefined backlog of drainage work in many offices, and in some instances this program does not appear to be diligently pursued. The magnitude of the drainage backlog cannot be estimated on the basis of the methodology employed by KTCI but clearly requires continued management attention.

- Significant progress has been made during the past two years in the reorganization to implement KGS and drainage programs within local BLM offices.

- Time reporting and work measures used for both the KGS and drainage programs should be improved.

- While the BLM has a number of senior personnel with the appropriate technical knowledge about the KGS and drainage programs, there is a shortage of such personnel supervising and managing these programs.

- A large percentage of personnel involved in the KGS and drainage programs, both younger and older, perceive a lack of career advancement opportunities in the BLM.

- The incidence of errors and omissions in the data bases used by each of the 17 offices visited to prepare KGS and drainage work products decreases KGS and drainage productivity.

- While nationwide procedures have been developed for both the KGS and drainage programs, there is a lack of standardized procedures in effect throughout the 17 offices visited, a factor which impairs quality control.

- Although management is extremely concerned about providing adequate training for personnel, only limited training opportunities are available.

- Only limited use is made of automated data processing (ADP) systems in the two programs.

KTCI's statement of these findings should be viewed in the context of the directives, provided to KTCI by senior BLM officials, to conduct a rigorous analysis of these programs on the basis of commercial industry practices. KTCI was further directed to provide explicit findings and recommendations to assist BLM management in improving these programs. Our findings are, therefore, constructive attempts to implement these directives and are in no way intended to impugn the hard work and dedication of BLM employees in all of the offices visited and the significant progress made within the programs during the past several years.

1.4 Evaluation of Alternatives

A number of alternatives are available for increasing the productivity and effectiveness of both the KGS and drainage programs. Based upon our field work and discussions with managers and staff in the various BLM offices visited, we identified the following as options to consider:

- Centralize both programs at the State Office level.

- Centralize both programs at the regional or national levels.

- Maintain the status quo.

- Continue to perform the work at existing levels but establish a national Technical Assistance Group to support the programs.

In choosing among these alternatives, we kept the following in mind as key factors:

- Keep operations as close to being "on the ground" as practical, given the circumstances and the progress already achieved in this regard.

- Maintain the "multiple use" mission of the BLM.

- Minimize, as much as possible, shifting funds between programs.
- Minimize transfers of personnel and data bases to other locations.
- Focus on providing high levels of quality control, consistent with other BLM programs.
- Minimize, as much as possible, the need for BLM personnel to travel.

Policy questions about the relative advantages of competitive versus noncompetitive leasing were outside the scope of our study to evaluate the two programs as they now exist and recommend improvements.

1.5 Recommendations

Based upon the foregoing, we recommend that the BLM:

- Maintain both KGS and drainage programs in current District and State Offices.
- Establish a single permanent Bureauwide organizational group to provide standardized procedures, technical support, computer applications, training, and quality control to the KGS and drainage programs. Such assistance should be tailored to local requirements. This Technical Assistance Group should be staffed with senior BLM petroleum geologists and engineers. Figure 1 depicts the group's organizational structure and basic functions. The BLM should consider a technical support contract to augment the available senior staff in initially implementing the group's functions.
- Undertake measures to define the backlog of drainage work.
- Develop new workload measurement standards for both the KGS and drainage programs.
- Consider hiring outside contractors to assist State and District Offices in preparing KGS and drainage studies, particularly when significant backlogs exist.
- Alter staff mix to include more physical science technicians, cartographic technicians, and clerical personnel to assist in KGS/drainage work and to perform most technician-level work in the programs.
- Undertake measures to help assure minerals personnel that they have rewarding career paths within the BLM.

- Define and maintain in each office a streamlined standardized data base as completely and correctly as possible. Focus management attention on maintaining complete, up-to-date standardized oil and gas base maps.

- Provide continuing technical training in petroleum geology and reservoir engineering to improve expertise for KGS and drainage professionals.

- Increase productivity through more extensive use of ADP systems.

1.6 Report Format

Following is a detailed discussion of our findings and recommendations. The overall report is organized in four parts:

Volume I - Management Summary

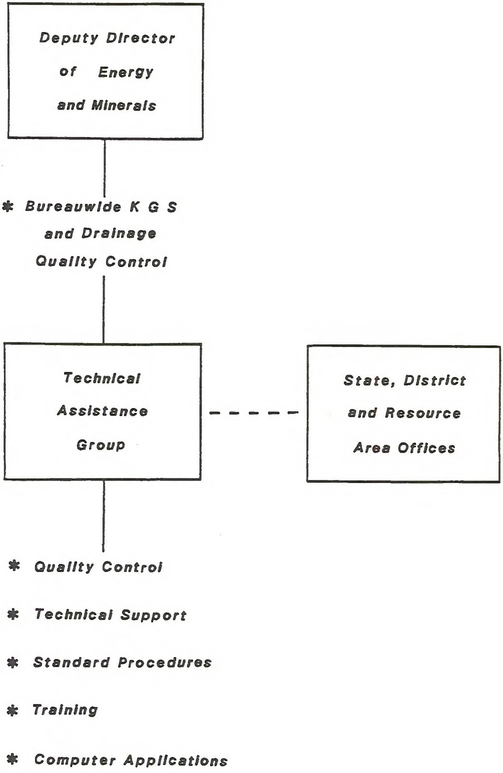
Volume II - Individual Data Base Reports

Volume III - Supporting Documentation

Volume IV - Management Study Working Papers

Figure 1

TECHNICAL ASSISTANCE GROUP


Deputy Director of Energy and Minerals
✱ Bureauwide K G S and Drainage Quality Control
Technical Assistance Group
State, District and Resource Area Offices
✱ Quality Control
✱ Technical Support
✱ Standard Procedures
✱ Training
✱ Computer Applications

2.0 Statement of Work

The overall objective of contract YA-551-CT4-340087 has been to prepare recommendations to the Director of the Bureau of Land Management on ways to improve the productivity and effectiveness of the KGS and drainage programs.

2.1 Tasks Performed

The Statement of Work for the contract encompassed four tasks:

- Task A - Data Base Evaluation
- Task B - KGS Determinations
- Task C - Potential Drainage Situation Identification
- Task D - Management Evaluation

Task A

The purpose of Task A was to evaluate the condition of the data used by KGS and drainage personnel in the various State and District Offices and Resource Area Headquarters for preparing KGS reports and making drainage determinations. In each office evaluated, KTCI personnel sought to identify the data used in KGS and drainage studies and to note the extent of errors and omissions in those data. A report was prepared for each of the 17 offices visited, and the findings and conclusions of each report were then reviewed and discussed with the management of each office. Comments were sought from management. Copies of the final Task A reports are included in Volume II.

Having prepared all 17 reports, KTCI personnel involved in Task A then worked with personnel involved in Task B (KGS preparation) and Task C (potential drainage situation identification) to determine the best data base for use in preparing KGS and drainage studies. Consideration was also given to the cost, in both manpower and budget terms, of conforming each of the 17 data bases to the preliminary model data base defined as part of the study.

Task B

The purpose of Task B, the preparation of KGS reports, was two-fold: first, to help KTCI personnel become intimately familiar with the requirements for preparing KGS reports; and second, to assist three BLM offices in reducing KGS work backlogs. In order to make effective technical recommendations concerning the KGS program, KTCI personnel needed to have a thorough technical understanding of the work product, the time required to prepare the product, and limitations of data available to prepare the reports. The best way to gain such an understanding was to prepare actual reports. In each of the three BLM offices where KTCI personnel prepared KGS reports, Casper, Billings and Denver, there was a sizeable backlog of KGS work. A secondary purpose, and benefit, of Task B was to help each of these three offices lessen KGS backlogs.

A summary of the KGS reports prepared by KTCI is included as Appendix A.

Task C

The purpose of Task C was to:

- Develop written drainage identification procedures, including quality control procedures.
- Contribute to the reduction of this backlog.
- Evaluate the facilities and procedures employed by the BLM in accomplishing drainage studies.

KTCI's findings, conclusions and recommendations were then incorporated into the overall recommendation for the drainage program.

A summary of the drainage work performed by KTCI in 12 individual offices is included as Appendix B.

Task D

The purpose of Task D was two-fold: first, to evaluate the management of the KGS and drainage programs in each of the 17 offices visited; and second, to synthesize the findings of Tasks A, B, C and D into a set of summary findings, conclusions and recommendations for the BLM as a whole.

Copies of the management reports prepared by KTCI for the 17 individual offices are included in Volume IV. This Report to the Director represents the final product of Task D for the BLM.

2.2 Scope of Work Performed

As discussed above, 17 State and District Offices were visited in the course of preparing this report. Exhibit 1 lists each of those offices, the dates during which work was performed and the tasks which were performed in each office. In addition to the 17 offices, KTCI personnel also visited the Washington, D.C. Office, Denver Service Center, Wyoming State Office and several Resource Area Headquarters.

As part of the contract, KTCI personnel were required to develop a set of written work procedures for each of the four tasks. These procedures, included in Volume III, were developed to help assure consistency and quality of the work and also to help in making final recommendations.

KTCI personnel were also required to develop a set of written quality control procedures for each of the four tasks and to prepare a systematic quality control program for the contract. A quality control team was formed to monitor work products generated. At the same time, the Contracting Officer's Technical Representative developed a quality assurance program for reviewing and approving the work prepared by KTCI. In each office where KTCI personnel prepared Task B and Task C work products, management designated a quality control reviewer. Each reviewer was charged with the responsibility of evaluating KTCI work products according to the standardized procedures established for the contract.

In each office visited, work products were generated for each task conducted. Exhibit 1 further summarizes the reports prepared for each office. In each of the 17 offices visited, a Task A data base evaluation was prepared. A total of 41 KGS reports were prepared, and copies of these reports are now filed in the respective offices in which they were prepared. In each of the 12 offices where Task C was conducted, two products were prepared: first, a written report summarizing the work performed; and second, a product package and work file consisting of those items necessary to identify potential drainage, supportive documents, and Individual Possible Drainage Identification Report memoranda for each potential drainage situation which KTCI drainage personnel identified in the office. The product packages and work files are now stored in the respective offices in which the work was performed. In each of the 17 offices visited, a Task D management evaluation report was prepared and reviewed orally with the local management; no written copies were distributed, upon instructions by the Contracting Officer.

In the course of the contract, the scope was modified to include individual office closeouts with management. A summary of these closeouts is provided as Exhibit 2. In each of the 17 offices, management was provided with a copy of the Task A report and, where applicable, the Task C summary report. The individual office closeouts proved to be a very valuable opportunity to discuss with managers our findings and to solicit comments regarding the overall program. District and State Office managers provided very valuable insights to KTCI personnel.

EXHIBIT 1

BLM OFFICES VISITED

OFFICE	DATE OF FIRST VISIT	TASKS PERFORMED IN OFFICE A	B	C	D
(1) Washington D.C.	1/20/85				X
(2) State Offices					
- Billings, MT	11/15/84	X	X		X
- Cheyenne, WY	12/11/84				X
- Denver, CO	1/09/85	X	X		X
- Reno, NV	6/10/85	X			X
- Salt Lake City, UT	5/13/85	X			X
(3) District Offices					
- Albuquerque, NM	10/29/84	X		X	X
- Bakersfield, CA	5/27/85	X			X
- Canon City, CO	1/31/85	X		X	X
- Casper, WY	9/25/84	X	X	X	X
- Craig, CO	1/29/85	X		X	X
- Dickinson, ND	4/18/85	X		X	X
- Lewistown, MT	4/01/85	X			X
- Miles City,MT	4/16/85	X		X	X
- Rawlins, WY	12/05/84	X		X	X
- Rock Springs, WY	12/03/84	X		X	X
- Roswell, NM	3/07/85	X		X	X
- Tulsa, OK	3/22/85	X		X	X
- Worland, WY	11/13/84	X		X	X
(4) Resource Area Headquarters					
- Great Falls, MT	4/08/85			X	
- Lander, WY	1/16/85			X	
(5) Denver Service Center	4/23/85				X

Note: No reports were prepared concerning the Denver Service Center or the Wyoming State Office in Cheyenne. Work conducted in the Great Falls Resource Area was related to the Lewistown District Office, and that conducted in the Lander Resource Area pertained to the Rawlins District Office.

EXHIBIT 2

SUMMARY OF MANAGEMENT CLOSEOUTS

OFFICE	DATE	ATTENDING
Albuquerque D.O.	1/11/85	Paul Applegate, DM
Bakersfield D.O.	6/27/85	Rory Raschen, Assoc DM
Canon City D.O.	6/06/85	Don Sparks, DM
Casper D.O.	5/31/85	Tim Monroe, DM
Colorado S.O.	6/24/85	Kannon Richards, SD
Craig D.O.	6/12/85	Larry Bauer, ADM, Min.
Dickinson D.O.	6/20/85	William Krech, DM
Lewistown D.O.	6/18/85	Glenn Freeman, DM
Miles City D.O.	6/19/85	Ray Brubaker, DM
Montana S.O.	6/17/85	Dean Stepanek, SD
Nevada S.O.	6/26/85	Tom Leshendok, DSD, Min.
Rawlins D.O.	4/05/85	Richard Bastin, DM
Rock Springs D.O.	4/04/85	Don Sweep, DM
Roswell D.O.	5/30/85	Fran Cherry, DM
Tulsa D.O.	5/16/85	Floyd Stelzer, Assoc DM
Utah S.O.	6/25/85	Roland Robison, SD
Worland D.O.	2/20/85	Chet Conard, DM

SD - State Director
DSD - Deputy State Director
DM - District Manager
Assoc DM - Associate District Manager
ADM - Assistant District Manager

3.0 Discussion of Findings and Recommendations

3.1 Program Priorities

Findings

As part of its "multiple use" mission, the Bureau of Land Management is charged with a wide range of responsibilities, including both mineral and nonmineral, in managing Federal lands. As Exhibit 3 indicates, the public lands oil and gas program, while one of the largest in the BLM, represents less than ten percent of the BLM's total budget. The Indian oil and gas program represents less than one percent of the budget.

Not only do these responsibilities include a variety of mineral and nonmineral areas, but within the realm of minerals only, BLM personnel are responsible for numerous programs. These minerals programs include, but are not limited to, the following:

- Inspection and enforcement
- Processing of Applications for Permits to Drill
- Over-the-counter leasing
- SOG leasing
- Competitive leasing
- Classification of lands (including KGS determinations)
- Economic evaluations
- Inventory
- Drainage
- Lease operations
- Lease adjustments

Within each office, minerals personnel must allocate their time to meet demands in these various areas, and no one area can be expected to receive an inordinate amount of attention, at least not over the long run. Exhibit 4 summarizes the allocation of time and the average cost in the public lands and Indian oil and gas programs during the first half of Fiscal Year 1985.

Because there are so many competing time demands, managers normally allocate greater time to the most pressing problems, usually those involving a demand by a BLM "constituent." As a result, programs with constituents demanding attention (e.g., an oil and gas driller requesting approval of an Application for Permit to Drill) will gain the most attention. While some programs have stronger, more demanding constituencies than others, others have virtually no demand at all. Both the KGS and drainage programs fall into the latter category; relative to other programs, virtually no BLM constituency is demanding BLM management to create KGS's and to identify drainage. On the other hand, when attention is paid to these two programs, many BLM constituents raise strong objections. Except when special attention is visited upon these two programs, as in the current situation, there is little or no incentive to devote resources to either program, particularly when other "demand" programs need so much attention.

Appendix C summarizes the distribution of workmonths within the Federal and Indian oil and gas programs during the first half of the 1985 Fiscal Year. Only 5.6 percent of total workmonths was allocated to the classification program, of which KGS is but a subset; and only 1.1 percent was allocated to drainage. When asked why so little attention was devoted to these programs, every manager interviewed cited the workload of other programs. It was also widely noted that this situation existed well before the merger of the Conservation Division of the U.S. Geological Survey into the Minerals Management Service and then the BLM.

While each office has unique characteristics and differing workloads, every office is giving the processing of Applications for Permits to Drill top priority. In general, KGS programs have been given a second or third level priority. In general, where an office has both a KGS and drainage workload, the drainage program was consistently given a lower priority. In a large number of offices visited, drainage was accorded the lowest level priority.

We observed several exceptional situations in the course of our work, as Exhibit 5 indicates. The Casper District Office is devoting significant resources to the KGS program, in part because of its tremendous KGS backlog and because of the intense scrutiny under which the office has been placed. Similarly, the Dickinson District Office, Bakersfield District Office and Albuquerque Office are now devoting increased resources to their drainage identification programs. However, in general, while both programs are receiving attention and scrutiny, neither is receiving adequate resources because of other priorities.

Recommendations

KTCI recommends the following:

3.1.1 Direct management emphasis and personnel resources toward the KGS program in locations where potential leasing activity is likely.

3.1.2 Give immediate attention to the drainage program at all levels because of the importance of protecting Federal resources and the unknown magnitude of the actual drainage situations.

3.1.3 Undertake systematic efforts to improve the quality of data bases so that productivity will increase in both programs.

EXHIBIT 3

MAJOR BLM PROGRAMS BY SUBACTIVITY
FISCAL YEAR 1985 - FIRST HALF

SUBACTIVITY	WORKMONTHS EXPENDED	%	YTD TOTAL OBLIGATION (000)	%
Administrative Services and Support	6,476.3	13.3	$ 39,179	18.4
Oil and Gas - Public Lands	5,834.9	12.0	17,701	8.3
Grazing Management	4,210.5	8.7	13,417	6.3
Timber Management	3,077.5	6.3	9,108	4.3
Lower 48 Lands	2,551.8	5.3	7,578	3.6
Alaska Lands	1,566.0	3.2	5,134	2.4
Oil and Gas - Indian	362.6	0.7	1,109	0.5
All Other	24,439.8	50.5	119,206	56.2
Total	48,519.4	100.0	$212,432	100.0
Public Lands and Indian Oil and Gas - Combined	6,197.5	12.8	$ 18,810	8.9

Average Total Dollars Obligated Per Workmonth Expended

- Oil and Gas - Public Lands	3,034
- Oil and Gas - Indian	3,058
- Bureauwide - all programs	4,378

Source: BLM Financial Management System

EXHIBIT 4

SUMMARY OF WORKMONTHS EXPENDED AND AVERAGE COSTS
FISCAL YEAR 1985 THROUGH 3/31/85
FEDERAL OIL AND GAS (SUBACTIVITY 4111)
INDIAN OIL AND GAS (SUBACTIVITY 4112)

	COST ELEMENT	4111 WM EXPENDED	4111 AVG. WM COST	4112 WM EXPENDED	4112 AVG. WM COST
01	Management Direction	415.3	$ 4,009	21.0	$ 4,175
02	Policy Prog. & Devel.	806.2	2,989	46.8	3,633
03	Training	102.7	2,255	1.7	2,666
06	Inventory	132.6	2,242	14.7	1,891
07	Research & Development	26.8	2,390	----	----
08	Plan Amendments	25.8	2,519	----	----
09	Environmental Impact	64.8	2,693	2.8	2,694
10	Prelease Notices	110.9	2,431	----	----
11	OTC Leasing	427.0	1,859	----	----
12	Classification	326.4	2,756	22.3	2,747
13	SOG Leasing	425.7	1,777	----	----
14	Competitive Leasing	264.6	2,338	----	----
15	Lease Adjustment	500.3	1,882	----	----
16	Lease Operations	1,004.9	2,170	120.8	2,442
17	Units & Communitization	177.9	2,386	23.2	2,226
18	Drainage Review	66.2	2,672	11.8	3,151
20	Inspection & Enforcement	954.6	2,163	96.7	1,968
98	Undistributed Labor	0.8	2,622	0.9	2,752
	TOTAL	5,833.5	$ 2,428	362.6	$ 2,610

Source: BLM Financial Management System
Totals do not agree with those in Exhibit 3 because of rounding.

EXHIBIT 5

SUMMARY OF ACTIVITY IN WORKMONTHS
OCTOBER - MARCH 1985
FEDERAL OIL AND GAS (SUBACTIVITY 4111)
INDIAN OIL AND GAS (SUBACTIVITY 4112)

OFFICE	4111 12	4111 18	4112 18
Washington Office	6.593	.233	.233
California State Office	.738	--	--
Bakersfield District Office	8.204	5.419	--
Colorado State Office	11.466	1.297	--
Canon City District Office	6.111	1.378	--
Craig District Office	1.797	3.309	--
Grand Junction Dist. Office	15.008	1.587	--
Montrose District Office	.059	--	.093
Eastern States St. Office	--	.453	--
Jackson District Office	7.256	1.460	--
Milwaukee District Office	5.116	1.547	--
Montana State Office	41.972	--	--
Butte District Office	.116	.023	--
Dickinson District Office	1.395	4.321	.117
Lewistown District Office	2.065	3.802	.186
Miles City District Office	--	1.716	1.677
Nevada State Office	.186	.052	--
New Mexico State Office	1.448	.640	.181
Albuquerque District Office	8.227	5.704	3.895
Hobbs District Office	--	--	--
Tulsa District Office	14.889	1.674	3.285

EXHIBIT 5 (CONT'D)

SUMMARY OF ACTIVITY IN WORKMONTHS
OCTOBER - MARCH 1985

OFFICE	4111 12	4111 18	4112 18
Utah State Office	2.687	1.093	--
Moab District Office	2.669	--	--
Vernal District Office	2.680	--	--
Wyoming State Office	2.198	5.541	.047
Casper District Office	28.844	.484	--
Rawlins District Office	23.699	10.610	1.663
Rock Springs Dist. Off.	17.262	3.907	--
Roswell District Office	20.529	4.698	--
Worland District Office	20.136	4.454	--
TOTALS	253.350	65.402	11.377

Subactivity:
4111 - Federal Oil & Gas
4112 - Indian Oil & Gas

Program Element:
12 - KGS and Clearlisting
18 - Drainage

Source: BLM Financial Management System

3.2 Workload and Program Monitoring

Findings

In a number of offices we visited, there is a sizeable backlog of KGS studies to perform. Exhibit 6 provides an estimate of the backlog of KGS work in these offices. KGS work can be prioritized and, in the course of our work, we determined that KGS action necessary due to SIMO listing is the highest priority. KGS action necessary due to new well completions is the second priority. The review of older KGS reports, particularly those prepared according to administrative procedures and not based upon technical geological evaluations, is the third priority.

Considering only the first priority of KGS reports, several offices have very sizeable backlogs. For example, the Casper District Office backlog has increased since KTCI began this contract, even though KTCI personnel prepared 29 KGS reports and Casper has a very productive KGS unit working full time. These offices can reduce their backlogs only through significant staff increases, assistance from outside contractors, or radical increases in productivity. The Bakersfield District Office was unable to estimate its KGS backlog since personnel responsible for the program did not have a precise knowledge of the number of wells on Federal land but outside a KGS. Other offices, notably the Nevada and Utah State Offices, have no KGS backlogs other than reviewing older KGS's.

The situation is less clear cut in the drainage program. To determine the backlog of drainage cases in any jurisdiction, management must conduct a systematic review of the oil and gas data base, particularly the oil and gas base maps. Such a systematic review is, naturally, a very time-consuming and costly effort. To our knowledge, at the time of our visits, only the Nevada State Office had conducted such a systematic review. Nevada is in a unique situation given its unusual geology and the low level of oil and gas activity. The Tulsa District Office had also conducted an extensive review for potential drainage and, as a result, has developed a significant backlog of potential cases, as indicated in Exhibit 7.

The Tulsa District Office illustrates one of the principal reasons that KTCI believes there is a general tendency Bureauwide to neglect the drainage program: that is, the more active the program, the greater the backlog. KTCI further believes that there is a degree of timidity on the part of BLM staff in pursuing potential drainage due to the lack of available in-house technical expertise for providing support in the prosecution of drainage cases. BLM staff is confronted by the significant technical resources available to producers, particularly major oil companies, while there are inadequate technical resources available to support their own efforts.

Although most of these offices have not conducted a systematic review for drainage, programs have been established and a backlog of cases developed. Exhibit 8 summarizes drainage productivity in various offices at the time of our visits. KTCI personnel performed potential drainage identification work in 12 offices and, as a result of the work, developed a number of drainage cases for each office. These are summarized in Exhibit 9.

In performing drainage identification, KTCI did not select areas for evaluation according to any generally accepted sampling method. The areas studied were designated by the local BLM officials and, in some instances, represented known problems. Therefore, the drainage identification results which we obtained cannot be extrapolated to estimate the total backlog of unidentified potential drainage cases.

Systems used by BLM management to monitor productivity in the KGS and drainage programs are of limited effectiveness. The Bureau has developed a sophisticated reporting system to track time expended by subactivity and program element. The system has been built using a sophisticated data base management system and permits a wide variety of formal and ad hoc reporting anywhere in the United States. For example, Appendix C summarizes workmonths expended during the first half of the 1985 Fiscal Year by state for various oil and gas programs. Unfortunately, for timekeeping purposes, the KGS program has been lumped together with the clearlisting program, so it is extremely difficult for management to determine how much time has been expended on KGS determinations. Fortunately, there is a separate category for drainage determinations.

Exhibits 10 and 11 summarize BLM reported work for KGS and drainage. The data suggest that the Tulsa and Capser District Offices have far surpassed their workload goals, but the report fails to reveal that both offices have extremely large KGS backlogs (see Exhibit 6). With respect to drainage, Exhibit 11 indicates that the Tulsa District Office has far exceeded its drainage objectives. What the data do not reveal is that, as a result of this effort, the Tulsa District Office has developed a larger backlog (see Exhibit 7).

Work measures which have been established for both the KGS and drainage programs are clearly inadequate. The standard work measure used for the KGS program is the number of KGS reports prepared and the standard measure for drainage is the number of cases reviewed. Unfortunately, it is virtually impossible to define a standard KGS and very difficult to define a drainage case. No two KGS determinations are alike; they differ in number of acres, number of wells in the KGS, number of productive intervals and in the nature and complexity of the geology. Since the work measure has been defined so simplistically, there is a natural tendency for managers to instruct employees to work on the smallest, simplest KGS cases in order to meet the Management by Objectives (MBO) targets. Larger, more complex KGS's are delayed if possible; such delay is an unintended result of the work measure. In one instance, we observed an office reporting KGS completions that were based on cursory reviews of existing KGSs requiring no changes.

Similarly, it is virtually impossible to describe the typical drainage case. The time required to identify a potentially offending well differs markedly from office to office. Once a potential case is identified, it may be possible to retire the case in a short period of time, or it may take a considerable expenditure of time, including writing several letters to the lessee. If the lessee sends data in response, evaluation of the data is time consuming. In the case of a compensatory royalty assessment, an appeal by the lessee may also be time consuming. Because of these factors, a more sophisticated work measure is needed for drainage.

Recommendations

KTCI recommends the following:

3.2.1 Ensure that senior technical assistance is readily available to local BLM staffs by establishment of a single Technical Assistance Group. This group should have available sufficient technical tools, such as sophisticated log analysis, mapping and reservoir simulation programs, in order to support KGS work and the resolution of disputed drainage cases.

3.2.2 Establish a centralized computerized drainage system for Bureauwide monitoring of the progress of drainage cases and the level of activity of each office. This system would assist in overcoming what KTCI considers to be a lack of consistency among offices in the reporting of completed drainage cases. Appendix D provides a preliminary sample design of a system of this nature.

3.2.3 Improve time reporting by providing sub-categories within "Classifications" to identify KGS activity more clearly.

3.2.4 Improve work measures to reflect varying KGS complexity and to monitor more accurately the drainage protection programs. Appendix E provides an example of this concept.

3.2.5 The recommendations made in 3.1, Program Priorities, also apply to the findings in this section.

EXHIBIT 6

SUMMARY OF TOTAL KGSs AND KGS BACKLOG IN OFFICES VISITED

OFFICE	TOTAL KGS'S IN EFFECT	TOTAL BACKLOG	PRIORITY ONE	PRIORITY TWO	PRIORITY THREE
Albuquerque	27	52	52		
Bakersfield	129	26	2	24	
Billings	439	270	128	133	9
Casper	565	200	40	40	120
Denver	368	102	19	8	75
Rawlins	106	12	0	9	3
Reno	6	0	0		
Rock Springs	90	49	4	18	27
Roswell	200	80	27	53	
Salt Lake City	86	1	0	1	0
Tulsa	1093	50	50		
Worland	137	53	12	17	24
Total	3246	895	334	303	258

Priority One - KGS action is necessary due to SIMO listing
Priority Two - KGS action is necessary due to new well completions
Priority Three - Review of older KGS's, principally pre-November, 1983, determinations

EXHIBIT 7

BACKLOG OF UNWORKED DRAINAGE CASES
TULSA DISTRICT OFFICE

PRIORITY	VERY HIGH	HIGH	MED	LOW	ON(1)	OLD CASES	TOTAL
Backlog at 8-31-84: (2)							
Texas Federal	18	11	40	78	22	15	184
Oklahoma Federal	8	30	60	101	27	160	386
Oklahoma Indian	4	222	390	644	308	677	2245
Total	30	263	490	823	357	852	2815
Backlog at 2-28-85: (3)							
Texas Federal	24	27	64	96	24	47	282
Oklahoma Federal	1	38	79	125	32	481	756
Oklahoma Indian	16	294	534	836	345	261	2286
Total	41	359	677	1057	401	789	3324
Net Change	11	96	187	234	44	(63)	509

(1) On a lease under Federal jurisdiction
(2) Source: 1985 Preliminary Annual Work Plan
(3) Source: Virgil Pauli

EXHIBIT 8

SUMMARY OF DRAINAGE ACTIVITY
FISCAL YEAR 1985 - FIRST HALF

State	Wells Reviewed	POW's Identified	Letters Sent	Actual Drainage Determination	Prod Wells Drilled	Dry Holes	Comp. Royalty Assess	(000) Royalty	(000) Comp Royalty
California	1029	197	41	0	0	5	0	0	0
Colorado	604	125	17	3	0	0	0	274	0
Eastern States	28	7	1	0	0	0	0	0	0
Montana	1465	320	237	29	0	6	0	570	0
New Mexico	2039	854	72	54	27	1	4	3271	0
Oregon	2	0	0	0	0	0	0	0	0
Utah	112	2	2	0	0	0	0	0	0
Wyoming	3695	791	39	10	1	0	8	0	125
Total	8974	2296	409	96	28	12	12	4115	125

Source: Quarterly Reports of Operations

EXHIBIT 9

SUMMARY OF DRAINAGE CASES IDENTIFIED BY KTCI PERSONNEL

OFFICE	WELLS EXAMINED	POWs IDENTIFIED	POLs IDENTIFIED	TOTAL ACREAGE COVERED	TOTAL FED. ACREAGE	TOTAL IND. ACREAGE
Casper	198	26	21	26,520	15,120	0
Rawlins	696	175	71	72,640	5,000	60,720
Rock Springs	678	96	45	100,720	85,680	0
Worland	480	71	34	51,760	36,270	0
Lewistown	698	75	37	69,120	90	29,950
Miles City	336	27	25	111,784	35,140	0
Dickinson	180	94	67	64,640	48,340	0
Canon City	257	19	4	88,320	15,750	0
Craig	94	10	13	94,080	10,583	0
Albuquerque	460	190	103	77,400	52,400	18,080
Roswell	179	36	41	54,440	28,280	0
Tulsa	363	61	15	15,480	320	7,050
Totals	4,619	880	476	826,904	332,973	115,800

POW - Potentially Offending Well
POL - Potentially Offended Lease
PDS - Potential Drainage Situation

EXHIBIT 10

WORKLOAD ACCOMPLISHED*
FISCAL YEAR 1985 - FIRST HALF
FEDERAL OIL AND GAS (SUBACTIVITY 4111)
CLASSIFICATIONS (PROGRAM ELEMENT 12)

OFFICE	PLANNED YTD	PLANNED TOTAL FY 1985	ACTUAL YTD
Albuquerque	20	40	204
Canon City	1	3	N/A
Casper	75	150	540
Colo. State Office	16	35	N/A
Grand Junction	10	20	N/A
Lewistown	---	---	5
Mont. State Office	30	110	9
Rawlins	207	415	N/A
Rock Springs	20	65	N/A
Roswell	40	80	8
Tulsa	50	100	211
Worland	31	62	8

*Workload units are classification actions.
Source: BLM Financial Management System

EXHIBIT 11

WORKLOAD ACCOMPLISHED*
FISCAL YEAR 1985 - FIRST HALF
FEDERAL OIL AND GAS (SUBACTIVITY 4111)
DRAINAGE (PROGRAM ELEMENT 18)

	PLANNED YTD	PLANNED TOTAL FY 1985	ACTUAL YTD
Albuquerque	42	85	17
Casper	N/A	150	N/A
Craig	100	200	1
Dickinson	66	200	N/A
Grand Junction	7	15	N/A
Lewistown	40	117	53
Miles City	50	130	163
Rawlins	50	100	N/A
Rock Springs	10	40	5
Roswell	126	250	11
Tulsa	23	45	150
Worland	900	1800	780

INDIAN OIL AND GAS (SUBACTIVITY 4112)
DRAINAGE (PROGRAM ELEMENT 18)

	PLANNED YTD	PLANNED TOTAL FY 1985	ACTUAL YTD
Albuquerque	115	225	9
Dickinson	8	25	N/A
Lewistown	8	24	1
Montrose	5	20	N/A
Tulsa	145	385	570

*Workload units are drainage determination reviews.
Source: BLM Financial Management System

N/A: Not Available

3.3 Organization

Findings

The Bureau of Land Management has a policy of decentralizing work to the lowest practical level, preferably to the Resource Area Headquarters and District Office levels, to serve its constituents best. This policy works quite well with many of the Bureau's programs and can work effectively for oil and gas programs. This organizational approach, however, still suffers the growing pains associated with the relatively recent decentralization of the KGS and drainage programs. The principal difficulties relate to dilution of technical talent, transfer of data bases and unfamiliarity of managers with these programs. There has been considerable progress made in alleviating these problems, and KTCI believes they will continue to lessen over time.

The local organizational structure in the various offices which we visited has an impact on KGS and drainage productivity. In a number of cases, personnel responsible for preparing KGS and drainage work products did not have control over the data base or over support services such as cartography. Exhibit 12 summarizes by office visited the responsibility for such functions. In cases where minerals personnel did not control the data base, productivity was diminished. In various offices, cartographic technicians worked in the Division of Operations, and minerals personnel were unable to gain adequate access to these services. In other cases, the cartographic technicians did not maintain maps according to standards deemed necessary to conduct KGS and drainage studies.

Recommendations

KTCI recommends the following:

3.3.1 Maintain the existing approach to decentralized oil and gas programs at the lowest practical level.

3.3.2 Provide technical assistance, tailored to local staff experience and education, from the Technical Assistance Group. Depending upon the level of technical skills available in the local office, this assistance would in some instances include preparation of actual KGS and drainage studies based upon data provided by the local office. In other instances, the Technical Assistance Group would provide only quality control reviews.

3.3.3 In instances where data base control or assignment of cartographic personnel is not considered appropriate to the minerals section, provide management emphasis to ensure responsiveness to oil and gas program requirements.

EXHIBIT 12

RESPONSIBILITY FOR DATA BASE ADMINISTRATION AND CARTOGRAPHIC SUPPORT

OFFICE	DATA BASE	CARTOGRAPHY
Albuquerque	Administration	Operations
Bakersfield	Minerals	Minerals
Cannon City	Minerals	(1)
Casper	Administration	Operations
Colorado S.O.	Administration	Operations
Craig	Minerals	(1)
Dickinson	Minerals	Minerals
Lewistown	Minerals	Minerals
Miles City	Minerals	Minerals
Montana S.O.	Minerals	Administration
Nevada S.O.	Minerals	Operations
Rawlins	Admin/Minerals(2)	Operations
Rock Springs	Minerals	Operations
Roswell	Minerals	Minerals
Tulsa	Administration	Administration
Utah S.O.	Minerals	Operations
Worland	Minerals	Operations

(1) No cartographic technicians
(2) Responsibility shifted for six months to Division of Minerals

3.4 Staffing

Findings

At the present time, the BLM has very limited numbers of petroleum engineers and geologists who have the appropriate skills to do KGS and drainage work. Exhibit 13 summarizes the staffing of fluid minerals groups in the various offices which KTCI personnel visited. As the exhibit indicates, a number of these offices have very few petroleum engineers and geologists, yet these professionals must support a variety of programs. With staffing so thin, it is virtually impossible to devote the necessary amount of time to programs such as KGS and drainage.

Productivity has also been low in the KGS and drainage programs partly because of the limited experience, both limited professional working experience and in many cases limited petroleum experience, of many of the personnel we interviewed in the course of our visits. Exhibit 14 summarizes the experience of personnel either supervising or serving as lead geologists in the KGS program in various offices. Exhibit 15 summarizes the experience of personnel either supervising or serving as lead engineers in the drainage program in these offices. As the exhibits indicate, many offices have personnel in key positions with little professional experience.

The other problem which we observed was that there were personnel involved in the programs with significant experience, but not of the type appropriate for performing KGS and drainage work. As a case in point, the BLM makes no distinction among different types of geologists (e.g., coal and petroleum geologists). Many of the people involved in the KGS program have many years of experience but have little or no petroleum geological experience. Over time, a coal geologist, for example, can learn the appropriate skills to be a good petroleum geologist doing KGS work, but it is not realistic to expect geologists without petroleum experience to become overnight experts in KGS work. In the course of our evaluation, we found numerous cases where geologists without a petroleum background were having to become KGS geologists in a short period of time.

The same problem is also true for drainage work. The principal technical skill involved in making a drainage determination is a thorough knowledge of reservoir engineering, a subset of the discipline of petroleum engineering. Reservoir engineering is a highly specialized field and one in which only a fraction of petroleum engineers are experts. In many cases, petroleum engineers who are involved in drilling and production have only limited knowledge and experience in reservoir engineering and, as in the case of the coal geologist becoming a KGS geologist, drilling and production petroleum engineers can become good reservoir engineers only after a considerable undertaking of effort. However, in the course of our interviews with personnel involved in the drainage program, we found that the principal skills employed by petroleum engineers in the BLM were related to drilling and production. One of the principal jobs of a typical petroleum engineer in the BLM is the approval of Applications for Permits to Drill, a task requiring a thorough understanding of drilling techniques and practices, but largely unrelated to reservoir engineering, the principal skill involved in drainage determinations.

Another staffing problem which we observed was an inefficient distribution of labor, when compared to industry practices, in preparing KGS and drainage determinations. The process of preparing both KGS and drainage determinations involves extensive data gathering and other clerical tasks. KGS determinations also involve significant cartographic work. Since there is such a shortage of petroleum engineers and geologists to do KGS and drainage work, one of the best ways to increase productivity is to provide a high level of technical/clerical support to the geologists and engineers. However, in most of the offices we visited, petroleum engineers and geologists were spending much of their time gathering data and performing cartographic tasks. Few of the offices we visited were making effective use of paraprofessionals to do such work. The most notable exception to this was the Roswell District Office, which makes very effective use of Physical Science Aides.

KTCI encountered morale problems among the minerals professionals throughout the offices visited. While a certain level of dissatisfaction is normal in any organization, these problems are partially related to effects of the merger. We observed a perceived lack of career opportunities either in BLM management or as senior technical specialists among minerals staff.

Recommendations

KTCI recommends the following:

3.4.1 Increase program staffing or, as an alternative, consider selectively supplementing BLM staff with temporary contractor support in the required technical disciplines.

3.4.2 Request the Office of Personnel Management to establish occupational codes or skill codes to define more precisely geological and engineering disciplines such as Petroleum Geologist, Reservoir Engineer, Production Engineer and Drilling Engineer. These classifications would likely improve staffing assignments and assist in identifying skill deficiencies.

3.4.3 Place greater reliance upon technicians in preparing KGS and drainage work products. For every two petroleum geologists or engineers, there should be at least one, preferably two, physical science technicians and a cartographic technician.

3.4.4 Establish specialist, nonsupervisory petroleum geologist and engineer positions at the GS-13, GS-14 and GS-15 levels.

3.4.5 Encourage minerals personnel to move into line management positions in the BLM, generally at the Resource Area and District levels.

EXHIBIT 13

FLUID MINERALS STAFFING
SELECTED OFFICES
FISCAL YEAR 1985

Office	Chief	Petroleum Engineers	Geologists	Other	Total
Albuquerque (1)	1	3	3	1	8
Bakersfield (12,13)	1	1	1	1	4
Canon City (6,7)	1	1	1	13	16
Casper (1)	1	6	6	4	17
Colorado S.O. (5,6)	0	0	3	1	4
Craig (6)	1	5	1	2	9
Dickinson (11)	1	2	1	9	13
Lewistown (8,10)	2	2	3	12	19
Miles City (8)	1	1	1	4	7
Moab (12,14)	1	2	2	2	7
Montana S.O. (3,4)	1	1	5	1	8
Nevada S.O. (12)	1	1	2	9	13
Rawlins (2)	0	6	3	5	14
Rock Springs (3)	1	5	5	5	16
Roswell (8)	2	4	7	4	17
Tulsa (8,9)	2	5	6	5	18
Utah S.O. (12)	1	2	1	5	9
Vernal (12,14)	1	2	1	5	9
Worland (2)	1	4	4	5	14
Total	20	53	56	93	222

Notes:

(1) September, 1984
(2) October, 1984
(3) November, 1984
(4) Agreements and Evaluation Section only
(5) KGS Determinations Unit only
(6) January, 1985
(7) Division of Resource Management
(8) March, 1985
(9) Branches of Fluid Operations, Agreements combined
(10) Lewistown and Great Falls combined
(11) April, 1985
(12) May, 1985
(13) Branch of Agreements and Development only
(14) Offices evaluated in conjunction with Utah State Office

EXHIBIT 14

EDUCATION AND EXPERIENCE KGS SUPERVISOR/LEAD GEOLOGIST

OFFICE SUPERVISOR	EDUCATION (1)	PETROLEUM GEOLOGICAL EXPERIENCE	KGS EXPERIENCE
Albuquerque(2)	M.S. Civil Engr., Univ. of New Mexico, 1975	1 Year	1 Year
Bakersfield	B.S. Mechanical Engr., Univ. of Washington, 1973	Limited	Limited
Casper(3)	B.S. Geology, Univ. of Wyoming, 1951	30 Years	15 Years
Colorado S.O.	M.A. Geology SUNY, 1978	7 Years	1.5 Years
Montana S.O.	M.S. Geology, Univ. of Kansas, 1974	1.5 Years	1.5 Years
Nevada S.O.(3)	M.S. Geology, Univ. of New Mexico,1962	15 Years	1 Year
Rawlins(3)	B.S. Geology, Kansas State, 1968	5 Years	1 Year
Rock Springs(3)	M.S. Geology, Univ. of Nebraska, 1976	3 Years	1 Year
Roswell	M.S. Geology, Univ. of Arkansas, 1975	11 Years	7 Years
Tulsa	M.S. Geology, Tulane, 1974	30 Years	15 Years
Utah S.O.(3)	Ph.D. Geology, Univ. of Arizona, 1974	15 Years	3 Years
Worland(3)	B.S. Geology, Univ. of North Dakota	1 Year	8 Months

(1) Highest degree obtained
(2) Has since left BLM
(3) Lead Geologist, not supervisor

EXHIBIT 15

EDUCATION AND EXPERIENCE
DRAINAGE SUPERVISOR/LEAD ENGINEER

OFFICE SUPERVISOR	EDUCATION	PETR. ENGR. EXPERIENCE	DRAINAGE EXPERIENCE
Albuquerque(1)	M.S. Civil Engr., Univ. of New Mexico, 1975	9 Years	5 Years
Bakersfield	B.S. Petroleum Engr., Univ. of Calif., 1942	28 Years	2 Years
Canon City(2)	B.S. Geology, Oklahoma State, 1968	Limited	None
Casper	B.S. Petroleum Engr., Univ. of Wyoming, 1949	25 Years	Limited
Craig	B.S. Petroleum Engr., Colo. Sch. of Mines, 1984	6 Months	6 Months
Dickinson(2)	B.A. Geology, Univ. of Colo., Colo. Sp., 1980	1 Year	1 Year
Lewistown(2)	B.S. Petroleum Engr., Montana Tech, 1975	8 Years	2 Years
Miles City	B.S. Petroleum Engr., Montana Tech, 1983	1 Year	1 Year
Nevada S.O.(2)	B.S. Petroleum Engr., Univ. of Tulsa, 1947	25 Years	2 Years
Rawlins	B.S. Mining Engr., Colo. Sch. of Mines, 1959	None	None
Rock Springs	B.S. Petroleum Engr.	5 Years	None
Roswell	B.S. Civil Engr., New Mexico State, 1975	10 Years	Limited
Tulsa(2)	B.S. Petroleum Engr., Univ. of Oklahoma, 1956	25 Years	4 Years
Utah S.O.(2)	M.S. Petroleum Engr., Univ. of SW Louisiana, 1977	8 Years	4 Years
Worland	B.S. Chemical Engr., City Univ. NY, 1977	7 Years	Limited

(1) Has left BLM (2) Lead engineer

3.5 Data Base

Findings

One of the most important elements in preparing KGS and drainage determinations is the quality of the oil and gas data base. In every office we visited, we observed weaknesses in the data base used to prepare these determinations. These weaknesses tend to impair the quality of the KGS work product and to limit productivity to a significant degree. Considering the volume of data and the frequency of changes within these data bases, this finding is not surprising. Continued management attention and review are necessary.

KTCI personnel conducted an evaluation of the data bases in each of the 17 offices which we visited. Where possible, data were selected randomly according to generally accepted principles and methods of statistical sampling. In other cases, sampling was conducted on a judgmental basis. In each office, a report was prepared which, for each data element examined, included a description of the data element, KTCI's findings and our conclusions. In each report, a table noted errors and omissions observed for each data element. KTCI data base specialists then noted in each report what they considered were major weaknesses and less significant weaknesses. Copies of all 17 data base evaluations are included in Volume II.

Appendix F summarizes our findings for each of the data bases. As these findings indicate, each data base has a number of weaknesses which should be of concern. No ranking of data bases is intended; instead common data base weaknesses observed across the various offices are identified. There are weaknesses in a number of offices in the following data base elements:

- Lease files
- Lease record cards
- Individual Well Records
- Oil and gas base maps
- Petroleum Information scout cards
- Well logs

Data base deficiencies impaired productivity in each office we visited. Data base omissions force KGS geologists and drainage engineers to search for alternative data sources, a time-consuming process. Inconsistencies among various data base elements force personnel to check additional sources to determine which, if any, of several alternative data sources is in fact the correct one.

It was also noted that individual offices were dealing directly with information services such as Dwight's, Petroleum Information, and the various firms which provide data for BLM oil and gas activity. This practice is potentially cost inefficient since the BLM may not always obtain maximum volume discounts.

Recommendations

KTCI recommends the following:

3.5.1 Establish nationwide standards for the data base used to conduct KGS and drainage studies. Exhibit 16 provides a preliminary model of this nature. Efforts should be made to conform data bases with the BLM-defined standards.

3.5.2 Improve systematic programs of data exchange with state oil and gas commissions in most states.

3.5.3 Review centralized contracts with various information service firms to eliminate possible duplicate contracts and cost inefficiencies.

3.5.4 Consider obtaining data tapes from Dwight's or Petroleum Information for implementation on a BLM host computer to eliminate third-party timesharing.

3.5.5 Conduct an annual audit of each KGS and drainage data base in order to monitor progress and ensure data base quality.

3.5.6 Provide specialized training to personnel responsible for maintaining each data base.

3.5.7 Recommendation 3.4.3 also applies to the findings in this section.

EXHIBIT 16

BUREAU OF LAND MANAGEMENT
MODEL DATA BASE FOR KGS AND DRAINAGE DETERMINATIONS

Lease Records

- ALMRS, updated with all royalty rate data
- Lease record cards as a supplement

Well Data

- Individual Well Records for each Federal and nonfederal well
- Well logs for each Federal well
- All spacing orders for the jurisdiction

Mapping

- Oil and gas base maps (1:24000 scale) which include the following
  - KGS boundaries
  - Unit boundaries
  - Participating areas
  - Communitized areas
  - Lease boundaries and ownership
  - Federal and nonfederal wells, including:
    - Well name and number
    - Well status
    - Operator
    - Producing formation

EXHIBIT 16 (CONT'D)

BUREAU OF LAND MANAGEMENT
MODEL DATA BASE FOR KGS AND DRAINAGE DETERMINATIONS

Other Data

- Pin map (or equivalent)
- File containing copies of all KGS reports and work papers, preferably ordered by KGS name
- File containing Monthly Reports of Operations, ordered by lease, unit or communitized area
- Unit notebook
- KGS notebook
- Complete and current library of major geological and petroleum engineering texts and local geologic studies

Supplemental Data

- File containing P.I. Weekly Reports (or equivalent service)
- File containing P.I. scout cards (or equivalent service)
- Online computer access to Dwight's Energydata and Petroleum Information

3.6 Procedures

Findings

Although handbooks provide guidance to the various State and District Offices on both the KGS and drainage programs, we observed different procedures in each program in each office visited. We found neither standard procedures for preparing nor standard requirements governing the content of a KGS report. KGS reports differed widely in format and content among offices. We observed no set of minimum standards to which any KGS report must conform. Similarly, we observed no consistent procedures to review and approve KGS reports. We found no standardized review checklist to use to assure uniformity and consistency of reports among different reviewers and different offices. We found the same lack of standardization in the drainage program.

This lack of standardization makes it difficult to compare work products among offices. It also makes it difficult to determine if any given work product is adequate or if it has been overworked. Since staffing is so limited, it is important that work products not be overworked, yet the lack of standardized procedures limits the ability of management to avoid overwork. The lack of standardized review procedures is also unfair to KGS geologists and drainage engineers since there is no objective measurement for work quality and productivity.

We also observed a lack of standardization in procedures to maintain data bases. The lack of minimum standards results in certain data base elements being inadequate while other data base elements are overworked. The largest area of concern is the lack of standardization of oil and gas (O & G) base maps. The O & G base maps constitute a comprehensive data source for KGS and unit boundaries, participating areas, communitized areas, lease ownership, well status, well number, operator and producing formation, and they are integral to the work performed by drainage engineers and other fluids personnel. O & G base maps, as interpreted by KTCI, are updated field maps and Township maps containing the information listed above. Some offices visited by KTCI did not have updated field maps or a regional oil and gas base mapping system. Throughout the BLM, KTCI found that the O & G maps which were prepared followed no consistent standards.

Recommendations

KTCI recommends the following:

3.6.1 Develop more comprehensive nationwide standarized written procedures for KGS and drainage work products. KTCI developed such procedures in performing both Tasks B and C during the performance of this contract. Volume III includes our written procedures developed for this project.

3.6.2 Require representatives from the Technical Assistance Group to visit individual offices periodically in order to observe procedures and make recommendations for improvement.

3.6.3 Define a standard for all BLM O & G base maps.

3.7 Training

Findings

Although management in each office visited was extremely concerned about providing adequate training for personnel, virtually every office had very limited training opportunities available. Exhibit 17 summarizes the number of training workmonths expended during the first half of Fiscal Year 1985 in the oil and gas program and the ratio of training time to total time. In every office we visited, management and staff indicated that training budgets are one of the first items to be cut during the course of the fiscal year, particularly the travel portion of the training budget. Because of the relatively remote location of many BLM offices, considerable funds must be expended to send personnel to training courses. Where training was available, priority was placed on nonminerals subjects such as defensive driving and EEOC compliance.

A significant percentage of drainage engineers, however, had attended the BLM's course on Communitization, Units, Drainage, Diligence and Determinations (CUDDD), the course which provides an introduction to drainage work. Likewise, nearly all of the KGS geologists had attended the introductory KGS course.

The shortage of training for KGS and drainage personnel is of particular concern, for several reasons. First, since many of the the engineers and geologists have only limited direct petroleum experience, training is very important. Second, the work requires certain highly specialized knowledge (e.g., log reading and interpretation for KGS work; reservoir engineering for drainage work) to which BLM personnel generally have only limited exposure. Third, in contrast to many professional disciplines, the body of knowledge in petroleum geology and engineering is expanding and changing rapidly. In order for BLM petroleum engineers and geologists to maintain and improve their skills, they must obtain a significant amount of training. Fourth, when BLM minerals decisions are appealed, KGS geologists and drainage engineers must match their professional skills against their highly competent counterparts in oil and gas companies. Industry personnel, as a rule, receive much continuing technical training. If BLM petroleum engineers and geologists do not obtain adequate technical training, they run a high risk of being outmatched in such appeals.

Recommendations

KTCI recommends the following:

3.7.1 Require all personnel involved in the KGS and drainage programs to receive a minimum of 40 hours of technical training per year on relevant petroleum subjects. Such training should be in addition to any regulatory-oriented training such as the BLM's CUDDD course.

3.7.2 Consider hiring outside contractors to develop specialized courses on KGS and drainage work.

3.7.3 Develop training courses that can be provided in the State and District Offices since travel and training budgets are so limited. Video cassette programs should be developed for viewing in the various offices. Technical specialists in the Technical Assistance Group should develop a wide range of special training courses on key aspects of KGS and drainage work on video cassette tapes. Commercial video cassette tapes, when available, should be acquired from professional organizations or major oil companies.

EXHIBIT 17

SUMMARY OF TRAINING WORKMONTHS
FISCAL YEAR 1985 - FIRST HALF
OIL AND GAS PROGRAM

STATE	TOTAL CLASSIFICATION WORKMONTHS	PERCENTAGE	TOTAL DRAINAGE WORKMONTHS	PERCENTAGE	TOTAL TRAINING WORKMONTHS	PERCENTAGE	TRAINING WM'S PER NON-TRAIN WM
WASHINGTON D.C.	7.1	2.0	0.7	0.9	2.8	2.9	0.009
ALASKA	54.9	15.7	0.0	0.0	9.1	9.5	0.024
ARIZONA	6.1	1.7	0.0	0.0	1.9	2.0	0.037
CALIFORNIA	9.6	2.8	5.6	7.2	4.7	4.9	0.022
COLORADO	33.3	9.5	8.2	10.5	7.7	8.0	0.012
EASTERN STATES	11.5	3.3	3.2	4.1	3.8	4.0	0.012
IDAHO	4.4	1.3	0.0	0.0	1.0	1.0	0.014
MONTANA	50.5	14.5	12.2	15.6	8.0	8.4	0.012
NEW MEXICO	53.4	15.3	19.9	25.5	20.3	21.2	0.016
NEVADA	1.0	0.3	0.1	0.1	1.9	2.0	0.019
OREGON	4.4	1.3	0.0	0.0	1.5	1.6	0.017
UTAH	11.8	3.4	1.0	1.3	8.4	8.8	0.018
WYOMING	100.7	28.9	27.2	34.8	23.7	24.7	0.015
DENVER SERVICE	0.0	0.0	0.0	0.0	1.0	1.0	0.022
TOTAL	348.7	100.0	78.1	100.0	95.8	100.0	

3.8 Quality Control

Findings

Of all our findings, the greatest single concern is the lack of adequate quality control in the KGS and drainage programs. This finding was unexpected since BLM management has instituted very good quality controls in its traditional nonminerals programs and has shown strong conviction in achieving and maintaining quality.

As discussed above, the first quality control weakness is the lack of standardized procedures and the lack of clear-cut minimum standards.

The second major quality control weakness is the lack of adequate technical supervision and review of work products generated by KGS and drainage personnel. By this we do not mean that a KGS geologist or drainage engineer must be directly supervised by a person with technical experience in the same field. In many cases, this would be inefficient because there is such a high clerical/managerial content to the job of the Branch Supervisor in the typical BLM office. In situations where there is not a supervisor readily available in the office to review and approve the work products of the KGS geologist or drainage engineer, an alternate means needs to be provided.

Recommendations

KTCI recommends the following:

3.8.1 Transfer principal responsibility for quality control from the states to the Washington Office, under the direction of the Deputy Director of Energy and Minerals to ensure uniform application of work product standards.

3.8.2 Make quality control functions the responsibility of the Technical Assistance Group. The functions of this group should include:

- Developing written nationwide quality control procedures for the respective programs.
- Preparing and maintaining manuals on the respective programs.
- Establishing standards of competence for personnel involved in KGS and drainage.
- Establishing standards of competence for personnel designated by State and District Offices to be KGS and drainage reviewers.

- Developing and supervising quality control review programs.
- Supervising the development of training programs relevant to the two programs.
- Conducting systematic, frequent on-site inspections of the programs in the respective District and State Offices.

3.8.3 Recommendation 3.6.1 also applies to the findings in this section.

3.9 ADP Support Systems

Findings

Since staffing levels in the KGS and drainage programs are limited, a key way to increase productivity is through the use of aids such as automated data processing (ADP). Unfortunately, we found only limited use of ADP systems in the KGS and drainage programs. The principal ADP application we observed was the use of Dwight's Energydata to obtain production history data from a producing well and, to a lesser extent, the use of the Automated Lands and Minerals Records System (ALMRS).

A number of offices we visited had obtained personal computers, but very few applications had been developed. We observed little or no use of computerized engineering programs, mapping software or geologic interpretation software, though such programs are widely available. Where personal computers had been purchased, inadequate funds had been allocated towards the purchase of software. Little or no provision had been made to train personnel to use the computer systems. The requisition and purchasing procedures observed were extremely cumbersome and excessively time-consuming.

The principal exception we noted was the use being made by personnel in the Bakersfield District Office of a Wang Personal Computer. Personnel in the Worland and Casper District Offices have also attempted to employ the computer effectively in KGS and drainage determinations.

Recommendations

KTCI recommends the following:

3.9.1 Continue to test and refine the data included within ALMRS.

3.9.2 Forward microprograms developed by local staff members to the Technical Assistance Group for testing, documentation, and distribution to other offices.

3.9.3 Include ADP user training in the overall training program.

3.9.4 Survey other Government agencies to determine the suitability of programs for oil and gas applications (e.g., USGS mapping software).

3.9.5 The recommendations made in 3.2, Workload and Program Monitoring, 3.3, Organization, and 3.5, Data Base, also apply to the findings in this section.

4.0 Key Considerations in Recommending a Technical Assistance Group

In the process of identifying various alternative ways to improve the effectiveness of the KGS and drainage programs, KTCI gave strong consideration to the following objectives which appear to be very important for the organization:

- Make recommendations consistent with the "multiple use" mission of the BLM.
- Minimize, as much as possible, shifting funds between programs.
- Minimize the transfer of personnel and data bases.
- Keep operations as close to being "on the ground" as practical, given the circumstances.
- Minimize, as much as possible, the need for BLM personnel to travel.
- Focus on providing high levels of quality control, consistent with other Bureau programs.

To be useful, any recommendation had to be consistent with the "multiple use" mission of the agency. Based upon our interviews with management, we concluded that it would be impractical to recommend any alternatives which establish the KGS and drainage programs on a stand-alone basis. Given the nature of the agency's mission, personnel involved in KGS and drainage work normally must coordinate their efforts with personnel involved in both other minerals and nonminerals programs. At the same time, major reallocations of funds from other BLM programs to the KGS and drainage programs are most likely not practical. The majority of BLM managers we interviewed indicated that additional transfers of funding from nonminerals to minerals programs would seriously impair the functioning of many of the former. Such a "rob Peter to pay Paul" solution would be counterproductive.

The weaknesses in the data bases we evaluated are primarily due to their transfer from location to location, often multiple times. Transfers of personnel have also created problems of organization continuity. Since there was a significant minerals reorganization only two years ago at the time of the BLM/Minerals Management Onshore Division merger, another large scale reorganization at this time would be unwise. In formulating our recommendations, we have been particularly concerned about minimizing transfers of data bases and personnel.

We observed that the BLM as a whole is strongly committed to a policy of conducting work "on the ground" as much as possible (i.e., in the Resource Area Headquarters and District Offices). The organization is oriented towards developing its personnel in these offices and then moving them upward through the organization. Managerial talent is developed principally in the Resource Area Headquarters and District Offices. Because the organization is strongly committed to this approach and because it can be an effective system, an important consideration in making any recommendation is to be as consistent as practical with this management philosophy.

In the course of our evaluation, we observed a strong emphasis on limiting travel. One reason for this, of course, is the lack of funds to spend on travel, discussed above in the context of training. Even apart from this, however, most BLM personnel with whom we spoke indicated that they did not want to travel often. A significant percentage indicated that they would consider leaving the agency if their jobs required a great amount of travel. We observed that personnel in the various State Offices and the Washington Office travel to the districts relatively infrequently. Given this, we have concluded that any recommendation developed should not require many BLM personnel to do a considerable amount of traveling.

We observed that a significant percentage of KGS and drainage determinations result in appeals from BLM constituents. Because of this, it is extremely important that these programs have good quality control procedures, notwithstanding our observation that the BLM is strongly committed to having good quality controls in its nonminerals programs. Any recommendation made, therefore, should have a very strong focus on quality control procedures.

The following alternatives were considered:

State Office Centralization

KTCI gave strong consideration to centralizing the KGS and drainage functions at the State Office level in all states. At the present time, KGS work is centralized in Montana, Colorado and Nevada. Similarly, drainage determinations are centralized at the State Offices in Nevada and Utah.

State Office centralization has a number of advantages. It concentrates scarce technical skills, specifically those of petroleum engineers and petroleum geologists. A key problem we have observed is the thinness of staff in many of the District Offices. By concentrating such skills in one location, a critical mass of talent may be obtained. State Office centralization further permits certain economies and efficiencies of scale, particularly in the use of cartographic and physical science technicians. As observed above, one of the best ways to increase productivity in both programs is to make increased use of such paraprofessionals. If KGS and drainage groups are established in the State Offices, cartographic technicians and physical science technicians can be assigned permanently to the group. Establishing such centralized groups also permits petroleum specialists to focus their attention on the KGS and drainage programs. One of the drawbacks of the multiple-use approach in the District Offices is that personnel are unable to devote significant amounts of time to any project at any one time. Typically, personnel must shift back and forth between different projects. Such shifting does significantly decrease KGS and drainage productivity. With a dedicated group of KGS and drainage personnel, this problem is lessened. Finally, in many instances, State Office centralization provides KGS and drainage personnel with better access to certain key data which are normally reposited at the State Office, typically lease data. We observed weaknesses in these data in many of the District Offices we visited. State Office centralization could help lessen this problem.

On the other hand, State Office centralization of these two programs has a number of significant drawbacks. It tends to increase overall manpower requirements, particularly of scarce personnel such as petroleum engineers and geologists. Even when these two programs are removed from the District Office, normally there is still a need for petroleum engineers and geologists in the district to process APD's and other minerals work. State Office centralization in Colorado and Montana has increased overall manpower requirements. Furthermore, the personnel on the State Office KGS and drainage team may still be directed to do other work. Another drawback is that key data base items must be duplicated if KGS and drainage work is centralized. In the course of our evaluation, we observed that significant data base weaknesses can be attributed to the need for such duplication. Further, duplication can be very expensive. Also, centralization often means that data bases must be moved to new locations. In the course of our evaluation, we observed that moving data bases in the past created significant problems. Finally, State Office centralization also means that many key personnel must be transferred to new locations. A number of KGS and drainage personnel we interviewed indicated that they would seriously consider leaving the BLM if asked to transfer to the State Office.

Regional or National Centralization of KGS and Drainage

The second alternative considered was to centralize all KGS and drainage functions either at a regional or national level. For example, several regional centers might be established to support several states. The advantages of State Office centralization, described above, would also apply in the case of a regional or national KGS and drainage group. The potential for achieving a critical mass of personnel and efficiencies and economies of scale would likely be even more pronounced with a regional or national grouping.

At the same time, the disadvantages of State Office centralization, described above, would also apply in the case of a regional or national system. The problems of data base duplication and transfer would be even more pronounced. Further, regional or national centralization would have the additional disadvantage of limiting the career development potential for petroleum engineers and geologists in the group. As discussed above, career development in the BLM generally occurs through the districts and then the State Offices.

Maintenance of the Status Quo

The third alternative considered was simply to maintain the status quo, making only minor changes within each office to help spur productivity and improve quality control. The focus of this approach would be to take measures to improve each existing data base, improve data processing and place increased reliance on paraprofessionals. The advantage of this approach is that moving personnel and data bases, a potentially costly proposition, would not be required. Further, leaving personnel at existing locations would permit the eventual development of KGS and drainage expertise in those offices, within the current organizational structure.

Unfortunately, there are several significant drawbacks to maintaining the status quo. First, improvements in productivity of existing personnel can only be limited and, in many cases, will be insufficient to eliminate work backlogs. The case of the KGS program in Casper is a good example: a significant increase in manpower will be necessary to lessen the work backlog there. Second, the biggest single problem with the current system is the lack of quality control. Maintaining the status quo will fail to address this problem.

Given these considerations, KTCI has recommended establishment of a Technical Assistance Group. Figure 1, included earlier, depicts the organizational structure and basic functions of this group. In most instances, KGS and drainage work products would be generated at current locations, but this permanent centralized group would provide nationwide standardized procedures, technical support, computer applications training, and quality control to the KGS and drainage programs. Technical assistance provided to individual offices would be tailored to local workload and staffing expertise. The senior BLM petroleum geologists and engineers staffing the group would be responsible for developing and administering national quality control procedures, reviewing and approving work products generated in the various offices, and visiting those offices on a regular basis to provide technical guidance to personnel.

There are several advantages to this approach. It would concentrate sufficient technical resources to provide effective support to the local offices and would minimize data tansfers. Also, this approach would allow development of standard, nationwide quality control procedures. As previously discussed, the lack of such national standards is a significant weakness in the current system.

The staffing level required to fulfill the above functions could vary widely depending upon the perceived urgency for implementing significant program improvements. Theoretically, the larger the staff, the more rapidly multiple program deficiencies could be addressed simultaneously. On the other hand, a technical support contractor could supplement BLM staff in the performance of these functions. KTCI considers the following staffing level for the Technical Assistance Group to be the minimum required to effect a material improvement in the two programs.

Management

Group Manager	1
Secretary/Clerical	1

KGS Support Group

Senior Geologist	3
Phys. Science Technician	3
Cartographic Technician	1

Drainage Support Group

Senior Engineer	1
Senior Geologist	1
Staff Engineer	2
Staff Geologist	1
Phys. Science Technician	3
Cartographic Technician	1

KTCI recognizes that our recommendation for additional staffing comes at a time when government spending reductions are being sought. The findings of our study, however, indicate substantive deficiencies in both the KGS and drainage programs. If the expedition of oil and gas leases were coupled with an aggressive drainage protection program, increased lease revenues would likely more than offset additional staffing and operating costs. In the event that Congressional legislation eliminates the requirement for KGS determinations and fair market determinations, the requirement for a Technical Assistance Group to support the drainage program would remain.

APPENDIX A

Summary of KGS Reports Prepared by KTCI

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
CONTRACT NO. YA-551-CT4-340087
KGS STUDIES PERFORMED
EFFECTIVE DATE AND ACRES ADDED

Casper District Office

KGS	Effective Date	Acres Added
Adon Road	3/6/85	421.85
Allison	5/1/85	600
Bronco	3/15/85	40
Donkey Creek	2/27/85	480
Double Shield	3/15/85	840
Dutch Field	3/15/85	160
Gibbs	12/24/84	1,000
Halverson	4/15/85	833.45
Hanaway Draw	1/18/85	440
Kane	3/15/85	920
Kara	3/15/85	1,840
Kuehne Ranch	3/15/85	1,582.98
Lad	11/6/84	800
M-D	12/11/84	678.92
Mitchell Creek-Long Tree	12/5/84	843.21
OK	3/15/85	320
Rozet	4/11/85	480
Semlek, West	4/1/85	520
Soda Well, East-Victor	2/1/85	5,470.76
Twin Creek	2/15/85	880
Undefined	11/9/84	760
Undefined/Unnamed	10/30/85	639.12
Unnamed	11/13/84	480
Wallace	3/15/85	160
Ward Creek	3/15/85	680
West Moorcroft	2/23/85	3,390
Whisler	3/15/85	360
York	10/26/84	560
Winter Draw	4/11/85	320
Total Acreage Added		26,500.29

Colorado State Office

KGS	Effective Date	Acres Added
Buck Creek	5/17/85	5,743.55
Buckham	4/29/85	0
Campo	4/1/85	1,508.69
Crow	4/29/85	800
DeNova	5/10/85	17,144.24
Fortuna	4/12/85	0
Pagoda	3/11/85	640
Rooster	4/11/85	360
Acreage Added-Colorado State Office		26,196.48

Montana State Office

KGS	Effective Date	Acres Added
Bakken	7/1/85	234,204.90
Franks Creek	7/1/85	7,895.20
Square Butte	5/31/85	12,572
Treetop	6/15/85	21,807.90
Acreage Added-Montana State Office		276,480.00
Total Acreage Added		329,176.77

APPENDIX B

Summary of Drainage Work Performed by KTCI

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
CONTRACT NO. YA-551-CT4-340087
DRAIANGE WORK PERFORMED

OFFICE	DATES	WELLS EXAMINED	POWs IDENTIFIED	POLs IDENTIFIED	TOTAL ACREAGE COVERED	TOTAL FED. ACREAGE	TOTAL IND. ACREAGE
Albuquerque	10-30-84 - 12-20-84	460	190	103	77,400	52,400	18,080
Canon City	02-19-85 - 03-27-85	257	19	4	88,320	15,750	0
Casper	12-04-84 - 02-01-85	198	26	21	26,520	15,120	0
Craig	02-20-85 - 03-22-85	94	10	13	94,080	10,583	0
Dickinson	06-03-85 - 06-20-85	180	94	67	64,640	48,340	0
Lewistown/ Great Falls	04-08-85 - 04-25-85	698	75	37	69,120	90	29,950
Miles City	04-25-85 - 05-17-85	336	27	25	111,784	35,140	0
Rawlins/ Lander	01-16-85 - 02-28-85	696	175	71	72,640	5,000	60,720
Rock Springs	01-14-85 - 02-22-85	678	96	45	100,720	85,680	0
Roswell	03-13-85 - 04-05-85	179	36	41	54,440	28,280	0
Tulsa	03-29-85 - 04-19-85	363	61	15	15,480	320	7,050
Worland	12-11-84 - 01-24-85	480	71	34	51,760	36,270	0
	TOTALS:	4,617	880	476	826,904	332,973	115,800

APPENDIX C

BLM Workmonth Distribution
Federal and Indian Oil and Gas Programs

BLM WORKMONTH DISTRIBUTION
FISCAL YEAR 1985 - FIRST HALF
4111 FEDERAL OIL AND GAS PROGRAM

STATE	MGMT WORKMONTHS EXPENDED	MGMT DIRECT AVG WM COST	POL & PROGS WORKMONTHS EXPENDED	POL & PROGS DIRECT AVG WM COST	TRAINING WORKMONTHS EXPENDED	TRAINING DIRECT AVG WM COST	OTC LEASING WORKMONTHS EXPENDED	OTC LEASING DIRECT AVG WM COST
WASHINGTON D.C.	1.7	5134.0	227.6	3513.0	2.8	3735.0	0.7	3774.0
ALASKA	33.8	4508.0	51.5	3602.0	9.1	2925.0	60.2	2213.0
ARIZONA	2.0	3947.0	9.7	3231.0	1.9	1624.0	8.8	1832.0
CALIFORNIA	16.2	3402.0	28.5	2933.0	4.7	2195.0	30.9	1803.0
COLORADO	28.1	3985.0	93.9	3119.0	7.7	2346.0	25.8	1791.0
EASTERN STATES	26.7	4055.0	17.8	2847.0	3.8	2497.0	92.0	1942.0
IDAHO	7.2	3336.0	3.9	2526.0	1.0	2231.0	22.0	1698.0
MONTANA	60.0	3766.0	78.3	2216.0	7.8	2397.0	38.1	1745.0
NEW MEXICO	57.8	3586.0	111.4	2602.0	18.9	2163.0	76.2	1674.0
NEVADA	5.7	3530.0	6.9	2276.0	1.9	2648.0	23.7	1698.0
OREGON	6.4	3644.0	15.6	2546.0	1.5	3033.0	23.0	1923.0
UTAH	26.0	3954.0	25.8	3147.0	8.4	2117.0	15.7	1785.0
WYOMING	85.5	3579.0	114.7	2641.0	23.5	2121.0	7.6	1714.0
DENVER SERVICE	1.3	5558.0	4.9	1549.0	1.0	1591.0	2.3	1812.0
TOTAL	358.4		790.5		94.0		427.0	
PERCENTAGE	6.2		13.6		1.6		7.3	

BLM WORKMONTH DISTRIBUTION
FISCAL YEAR 1985 - FIRST HALF
4111 FEDERAL OIL AND GAS PROGRAM
(CONT'D, PAGE 2)

STATE	SOG LEASING WORKMONTHS EXPENDED	SOG LEASING DIRECT AVG WM COST	COMPET LEAS WORKMONTHS EXPENDED	COMPET LEAS DIRECT AVG WM COST	I & E WORKMONTHS EXPENDED	I & E DIRECT AVG WM COST	INVENTORY WORKMONTHS EXPENDED	INVENTORY DIRECT AVG WM COST
WASHINGTON D.C.	8.3	3258.0						
ALASKA	5.2	2299.0	18.6	2509.0	17.1	3017.0	13.9	3049.0
ARIZONA	17.3	1789.0			0.9	3569.0		
CALIFORNIA	18.8	2031.0	8.2	2736.0	45.7	2409.0	1.5	2833.0
COLORADO	53.7	1685.0	30.2	2763.0	70.4	2299.0	9.6	2062.0
EASTERN STATES	34.5	1831.0	27.1	2337.0	40.2	2119.0	6.1	2482.0
IDAHO	16.4	1841.0			0.5	3123.0	0.3	2651.0
MONTANA	50.3	1583.0	18.5	2096.0	117.7	1976.0	14.9	1830.0
NEW MEXICO	53.0	1691.0	58.6	2120.0	250.3	2086.0	18.0	2213.0
NEVADA	12.7	1646.0	1.2	1384.0	13.4	2481.0	1.1	2571.0
OREGON	12.4	2304.0			0.4	3037.0	12.1	2905.0
UTAH	17.3	1984.0	13.5	2939.0	98.4	2202.0	11.4	2105.0
WYOMING	115.7	1689.0	88.6	2285.0	298.9	2153.0	27.6	1979.0
DENVER SERVICE	9.9	1642.0					16.1	1936.0
TOTAL	425.5		264.5		953.9		132.6	
PERCENTAGE	7.3		4.6		16.4		2.3	

BLM WORKMONTH DISTRIBUTION
FISCAL YEAR 1985 - FIRST HALF
4111 FEDERAL OIL AND GAS PROGRAM
(CONT'D, PAGE 3)

STATE	NOT/PERMITS WORKMONTHS EXPENDED	NOT/PERMITS DIRECT AVG WM COST	LEASE ADJUST WORKMONTHS EXPENDED	LEASE ADJUST DIRECT AVG WM COST	LEASE OPN WORKMONTHS EXPENDED	LEASE OPN DIRECT AVG WM COST	CLASSIF WORKMONTHS EXPENDED	CLASSIF DIRECT AVG WM COST
WASHINGTON D.C.							7.1	5242.0
ALASKA	21.0	3278.0	44.0	2534.0	24.0	3149.0	54.9	3905.0
ARIZONA	0.7	2313.0	1.0	1994.0	2.2	2071.0	6.1	1625.0
CALIFORNIA	2.1	2284.0	7.4	2391.0	30.6	2307.0	9.4	2221.0
COLORADO	11.9	2137.0	40.5	1942.0	142.6	2161.0	32.9	2508.0
EASTERN STATES	1.6	1939.0	11.2	2383.0	32.1	2542.0	11.5	2671.0
IDAHO	0.8	2379.0	6.4	1784.0	4.3	3233.0	4.4	3151.0
MONTANA	12.2	2272.0	36.9	1992.0	103.2	2251.0	46.0	2184.0
NEW MEXICO	5.8	2335.0	140.2	1923.0	172.3	2183.0	44.9	2752.0
NEVADA	8.9	2183.0	7.2	2102.0	9.2	3417.0	1.0	3233.0
OREGON	3.4	2603.0	5.6	2065.0	1.5	1947.0	4.4	3151.0
UTAH	16.5	2385.0	46.7	1761.0	121.8	2171.0	8.2	2590.0
WYOMING	25.5	2131.0	153.4	1576.0	361.1	1991.0	95.6	2410.0
DENVER SERVICE	0.3	2301.0						
TOTAL	110.7		500.5		1004.9		326.4	
PERCENTAGE	1.9		8.6		17.3		5.6	

BLM WORKMONTH DISTRIBUTION
FISCAL YEAR 1985 - FIRST HALF
4111 FEDERAL OIL AND GAS PROGRAM
(CONT'D, PAGE 4)

STATE	DRAINAGE WORKMONTHS EXPENDED	DRAINAGE DIRECT AVG WM COST	OTHER WORKMONTHS EXPENDED	OTHER DIRECT AVG WM COST	TOTAL WORKMONTHS EXPENDED	AVG WM COST	TOTAL COST
WASHINGTON D.C.	0.2	4290.0	56.0	5344.1	304.2	3898.0	1185771.6
ALASKA			19.7	4330.3	373.0	3233.0	1205909.0
ARIZONA			0.2	2832.5	50.8	2190.0	111252.0
CALIFORNIA	5.6	3576.0	11.1	1335.4	215.1	2457.0	528500.7
COLORADO	8.1	2688.0	54.4	2100.9	601.7	2419.0	1455512.3
EASTERN STATES	3.2	2639.0	20.1	1886.6	324.7	2348.0	762395.6
IDAHO			2.9	5478.8	70.1	2325.0	162982.5
MONTANA	10.0	2670.0	30.2	2514.8	614.1	2279.0	1399533.9
NEW MEXICO	12.6	2987.0	65.0	2175.1	1072.4	2241.0	2403248.4
NEVADA	0.1	1937.0	5.7	3367.3	98.6	2316.0	228357.6
OREGON			0.5	8874.2	86.8	2516.0	218388.8
UTAH	1.0	3336.0	27.1	2522.2	436.8	2343.0	1023422.4
WYOMING	25.5	2272.0	117.6	2090.1	1515.3	2189.0	3316991.7
DENVER SERVICE			10.2	3268.5	46.0	2218.0	102028.0
TOTAL	66.3		420.7		5809.6	2427.8	14104294.5
PERCENTAGE	1.1		6.2		100.0		

*Totals do not agree with Exhibit 4 due to rounding.

BLM WORKMONTH DISTRIBUTION
FISCAL YEAR 1985 - FIRST HALF
4112 INDIAN OIL AND GAS PROGRAM

STATE	MGMT WORKMONTHS EXPENDED	MGMT DIRECT AVG WM COST	POL & PROGS WORKMONTHS EXPENDED	POL & PROGS DIRECT AVG WM COST	TRAINING WORKMONTHS EXPENDED	TRAINING DIRECT AVG WM COST	INVENTORY WORKMONTHS EXPENDED	INVENTORY DIRECT AVG WM COST
WASHINGTON D.C.	1.7	5134.0	19.3	4727.0				
ALASKA								
ARIZONA			0.2	3045.0				
CALIFORNIA	0.1	3067.0	0.1	2005.0				
COLORADO	2.4	3837.0	1.9	3200.0			0.1	3756.0
EASTERN STATES	1.3	4224.0						
IDAHO	0.1	2152.0						
MONTANA	4.4	4062.0	11.4	2662.0	0.2	1412.0	3.6	2126.0
NEW MEXICO	7.6	4230.0	6.9	3640.0	1.4	2781.0	7.6	1863.0
NEVADA								
OREGON								
UTAH	2.1	4327.0	3.3	3098.0			2.6	1506.0
WYOMING	1.3	3423.0	3.5	1702.0	0.2	1706.0	0.7	2411.0
DENVER SERVICE								
TOTAL	21.0		46.6		1.8		14.6	
PERCENTAGE	5.8		12.9		0.5		4.0	

BLM WORKMONTH DISTRIBUTION
FISCAL YEAR 1985 - FIRST HALF
4112 INDIAN OIL AND GAS PROGRAM
(CONT'D, PAGE 2)

STATE	LEASE OPNS WORKMONTHS EXPENDED	LEASE OPNS DIRECT AVG WM COST	UNITS/CA'S WORKMONTHS EXPENDED	UNITS/CA'S DIRECT AVG WM COST	I & E WORKMONTHS EXPENDED	I & E DIRECT AVG WM COST	CLASSIF WORKMONTHS EXPENDED	CLASSIF DIRECT AVG WM COST
WASHINGTON D.C.								
ALASKA								
ARIZONA								
CALIFORNIA							0.2	1859.0
COLORADO	9.9	2268.0	0.1	2591.0	7.7	2521.0	0.4	3751.0
EASTERN STATES								
IOAHO								
MONTANA	14.5	2198.0	1.2	2283.0	11.3	2149.0	4.5	2986.0
NEW MEXICO	72.4	2674.0	18.9	2214.0	65.5	1815.0	8.5	2845.0
NEVADA								
OREGON								
UTAH	17.3	1928.0	0.6	2488.0	6.9	2275.0	3.6	2949.0
WYOMING	6.6	2043.0	2.3	2305.0	5.2	2322.0	5.1	2187.D
DENVER SERVICE								
TOTAL	120.7		23.1		96.6		22.3	
PERCENTAGE	33.3		6.4		26.6		6.2	

BLM WORKMONTH DISTRIBUTION
FISCAL YEAR 1985 - FIRST HALF
4112 INDIAN OIL AND GAS PROGRAM
(CONT'D, PAGE 3)

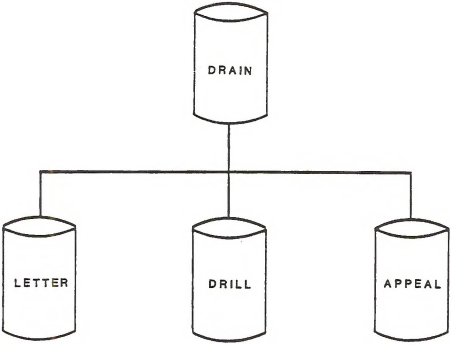
STATE	DRAINAGE WORKMONTHS EXPENDED	DRAINAGE DIRECT AVG WM COST	OTHER WORKMONTHS EXPENDED	OTHER DIRECT AVG WM COST	TOTAL WORKMONTHS EXPENDED	AVG WM COST	TOTAL COST
WASHINGTON D.C.	0.5	3552.0	0.0	0.0	21.5	4732.0	101738.0
ALASKA			0.0	0.0			0.0
ARIZONA			-0.2	3045.0			0.0
CALIFORNIA			0.3	4196.0	0.7	3054.0	2137.8
COLORADO	0.1	2550.0	0.1	664.0	22.7	2626.0	59610.2
EASTERN STATES			0.0	0.0	1.3	4224.0	5491.2
IDAHO			0.0	0.0	0.1	2152.0	215.2
MONTANA	2.2	2157.0	0.0	0.0	53.3	2504.0	133463.2
NEW MEXICO	7.3	3665.0	0.9	1645.7	197.0	2447.0	482059.0
NEVADA			0.0	0.0			0.0
OREGON			0.2	1902.0	0.2	1902.0	380.4
UTAH			0.5	2294.8	36.9	2318.0	85534.2
WYOMING	1.7	2149.0	2.0	8243.1	28.6	2608.0	74588.8
DENVER SERVICE			0.2	2478.0	0.2	2478.0	495.6
TOTAL	11.8		4.0		362.5	2608.9	945713.6
PERCENTAGE	3.3		1.1		100.0		

*Totals do not agree with Exhibit 4 due to rounding.

APPENDIX D

Sample Centralized Drainage Identification System

BLM Drainage Case Database



All four datasets are linked by common lease number.

Purpose of each dataset:

Drain -	record findings of KTCI drainage worker.
Letter -	record letters sent by BLM to lessee and record responses made.
Drill -	record information on offset wells drilled, compensatory royalties.
Appeal -	record information on appeals made.

```
! FILE = DRAIN.DMD
! DESCRIPTION FILE FOR DRAINAGE DATABASE


ATTRIBUTE STATE TEXT KEYED LEN 2                ! STATE IN WHICH LEASE LOCATED
ATTRIBUTE OFFICE TEXT KEYED LEN 3               ! BLM OFFICE RESPONSIBLE
ATTRIBUTE DATE_ENTERED DATE KEYED LEN 8         ! DATE CASE IDENTIFIED
ATTRIBUTE WORKER TEXT KEYED LEN 3               ! KTCI DRAINAGE WORKER
ATTRIBUTE TSPRANGE ABBR TR TEXT KEYED LEN 8     ! TOWNSHIP & RANGE OF LEASE
ATTRIBUTE SECTION TEXT KEYED LEN 8              ! SECTION IN WHICH LEASE LOCATED
ATTRIBUTE LEASE TEXT KEYED LEN 8                ! LEASE NUMBER (CONTAINE ALPHANM)
ATTRIBUTE WELLNAME TEXT KEYED LEN 12            ! NAME OF OFFENDING WELL
ATTRIBUTE WELLNO TEXT KEYED LEN 4               ! WELL NO. OF OFFENDING WELL
ATTRIBUTE QTRQTR TEXT KEYED LEN 8               ! OFFENDING WELL QUARTER/QUARTER
ATTRIBUTE STATUS TEXT KEYED LEN 3               ! STATUS OF OFFENDING WELL
ATTRIBUTE OFFENDING TEXT KEYED LEN 1            ! IS WELL OFFENDING (Y/N)
ATTRIBUTE DESCRIPT TEXT KEYED LEN 35            ! DESCRIPTION/COMMENTS
```

```
! FILE = LETTER.DMD
! DATA DESCRIPTION FILE FOR DRAINAGE NOTIFICATION DATABASE

ATTRIBUTE LEASE TEXT KEYED LEN 8               ! LEASE NUMBER - ALSO FOUND IN
                                               ! THE DRAIN, DRILL AND APPEAL
                                               ! DATABASES
ATTRIBUTE LETTER_1 DATE KEYED LEN 8            ! DATE FIRST NOTIFICATION LETTER
                                               ! SENT
ATTRIBUTE LET_1_RESP DATE KEYED LEN 8          ! DATE OF LESSEE RESPONSE
ATTRIBUTE LS_RSP_TP1 INTEGER KEYED LEN 1       ! TYPE OF RESPONSE TO LETTER
ATTRIBUTE LETTER_2 DATE KEYED LEN 8            ! DATE OF SECOND NOTIF LETTER
ATTRIBUTE LET_2_RESP DATE KEYED LEN 8          ! DATE OF SECOND LESSEE RESPONSE
ATTRIBUTE LS_RSP_TP2 INTEGER KEYED LEN 1       ! TYPE OF RESPONSE TO LETTER
ATTRIBUTE EVAL_GEOL TEXT LEN 15                ! GEOLOGIST PERFORMING REVIEW
ATTRIBUTE GEOL_ST_DT DATE LEN 8                ! DATE GEOLOGICAL EVAL COMPLETE
ATTRIBUTE EVAL_ENGI TEXT LEN 15                ! ENGINEER PERFORMING REVIEW
ATTRIBUTE ENGI_ST_DT DATE LEN 8                ! DATE ENGI EVAL COMPLETE
ATTRIBUTE NOTIF_LET DATE LEN 8                 ! DATE OF FINAL ACTION LETTER
ATTRIBUTE RESULT TEXT KEYED LEN 2              ! TYPE OF FINAL ACTION
ATTRIBUTE CLOSE_DATE DATE LEN 8                ! DATE CASE CLOSED
ATTRIBUTE DESCRIP TEXT LEN 35                  ! COMMENTS
```

```
! FILE = DRILL.DMD
! DATA DESCRIPTION FILE FOR OFFSET WELL/COMP ROYALTY DATABASE

ATTRIBUTE LEASE TEXT KEYED LEN 8           ! LEASE
ATTRIBUTE MMS_LET_DT TEXT KEYED LEN 8      ! DATE OF NOTIF LETTER TO MMS
ATTRIBUTE MMS_RESP_DT TEXT LEN 8           ! DATE OF MMS RESPONSE/ACTION
ATTRIBUTE MMS_RESP_TP TEXT LEN 2           ! TYPE OF MMS RESPONSE
ATTRIBUTE PLAN_DRIL_DT TEXT LEN 8          ! DATE TO COMPLETE OFFSET WELL
ATTRIBUTE ACT_COMP_DT TEXT LEN 8           ! DATE OFFSET WELL COMPLETED
ATTRIBUTE WELL_STAT TEXT KEYED LEN 4       ! STATUS OF OFFSET WELL
ATTRIBUTE DESCRIP TEXT LEN 35              ! DESCRIPTION
```

```
! FILE = APPEAL.DMD
! DATA DESCRIPTION FILE FOR DRAINAGE APPEAL CASES

ATTRIBUTE LEASE TEXT KEYED LEN 8         ! LEASE
ATTRIBUTE SO_APP_DT TEXT LEN 8           ! DATE OF APPEAL TO STATE OFFICE
ATTRIBUTE SO_APP_RSLT TEXT KEYED LEN 2   ! STATUS OF STATE OFFICE APPEAL
ATTRIBUTE WO_APP_DT TEXT LEN 8           ! DATE OF APPEAL TO WASH OFFICE
ATTRIBUTE WO_APP_RSLT TEXT KEYED LEN 2   ! STATUS OF WASH OFFICE APPEAL
ATTRIBUTE IB_APP_DT TEXT LEN 8           ! DATE OF APPEAL TO IBLA
ATTRIBUTE IB_APP_RSLT TEXT KEYED LEN 2   ! STATUS OF IBLA APPEAL
```

KEPLINGER TECHNOLDGY CONSULTANTS, INC.
BUREAU DF LAND MANAGEMENT
CONTRACT NO. YA-551-CT4-34DD87
PDTENTIAL DRAINAGE - WELLS IDENTIFIED
PROPRIETARY DATA

STATE	TOWNSHIP/ RANGE	SECTION	QUARTER/ QUARTER	WELL NAME	WELL NUM8ER	STATUS	PDTENTIALLY OFFENDING (Y,N)	DESCRIPTION	POTENTIALLY OFFENDED LEASE	BLM OFFICE	WORKER
WY	49N91W	7	CSWNW	WYCOL	6E		N	6 SL, 2 SR		WOR	SLT
WY	49N91W	8	SWSE	KEBA	3		N	D&A		WOR	SLT
WY	49N91W	8	SWSWSW	KEACHIE	1		N	D&A		WOR	SLT
WY	49N92W	1	CNWSE	METCALFE	1	PPW	N	D&A		WDR	SLT
WY	49N92W	1	CNWSW	UNION	5		N	4 SR, 2 SL, 2 PPW		WOR	SLT
WY	49N92W	1	CSENW	WYCOL	8		N	D&A		WDR	SLT
WY	49N92W	1	CSWNE	WYCOL	3		N	D&A		WDR	SLT
WY	49N92W	1	NWSWSW	UNION	1	PDS	Y	NONCOMPETITIVE DRAINING CDMPETITIVE	W53472	WOR	SLT
WY	49N92W	1	SESW	KIMBARK	1	PPW	N	D&A		WDR	SLT
WY	49N92W	1	SWNW	WYCOL	2		N	1 SL, 7 SR		WDR	SLT
WY	49N92W	11	CNENE	PETERSON	1		N	D&A		WOR	SLT
WY	49N92W	11	CNENW	GOVT-SIMIC	1		N	D&A		WDR	SLT
WY	49N92W	12	CNWNE	UNION	1E		N	5 SR, 1 PPW, 2 SL		WDR	SLT
WY	49N92W	12	CSENE	WYCOL	5		N	6 SR, 2 SL		WDR	SLT
WY	49N92W	12	CSENW	WYCOL	4	PDS	Y	NDNCOMPETITIVE DRAINING CDMPETITIVE	W53472	WOR	SLT
WY	49N92W	12	CSWNW	WHITE	1		N	D&A		WDR	SLT
WY	49N92W	2	CNESE	UNION	2	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE	W53472	WOR	SLT
WY	49N92W	2	CNESW	UNION	4		N	D&A		WDR	SLT
WY	49N92W	2	CSENW	HYLAND	7		N	2 NF, 5 SR, 1 SL		WDR	SLT
WY	49N92W	2	CSESE	FOX	1		N	3 SR, 1 SL, 4 LR		WOR	SLT
WY	49N92W	2	CSWNE	HYLAND	1		N	2 NF, 2 SL, 4 SR		WOR	SLT
WY	49N92W	2	CSWSW	SMITH	1	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE	W53472	WDR	SLT
WY	49N92W	2	NENE	UNION	6		N	D&A		WDR	SLT
WY	49N92W	2	NENW	BERRY	F21		N	3 NF, 3 SU, 1 PW, 1 PPW		WDR	SLT
WY	49N92W	2	SENE	HYLAND	9		N	6 SR, 1 NF, 1 SL		WOR	SLT
WY	49N92W	2	SENWNE	BERRY	1	PDS	Y	2 PDS, 1 PPW, 1 PW, 4 NF	WD2827	WDR	SLT
WY	49N92W	2	SWSE	MITCHELL	1		N	4 LR, 3 SR, 1 SL		WDR	SLT
WY	49N92W	3	NENE	MO8IL	41-6		N	2 NF, 6 SU		WDR	SLT
WY	49N92W	3	NWNESE	EMPIRE	2		N	D&A		WOR	SLT
WY	49N92W	3	W2NESW	RUSHMDRE	1	PDS	Y	DRAINING PHOSPHDRIA PA	WD20899	WDR	SLT
WY	49N92W	4	NENE	MDBIL	1		N	7 SU, 1 NF		WDR	SLT
WY	49N92W	4	NESW	FARMERS	11		N	D&A		WOR	SLT
WY	49N92W	4	SWNW	FARMERS	5	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE	W67885	WOR	SLT
WY	49N92W	4	SWNW	FARMERS	5	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE	W88166	WDR	SLT
WY	49N92W	5	SENW	HOCKER-FED	1		N	D&A		WDR	SLT
WY	49N92W	5	SWSESE	FARMERS	16		N	4 SL, 2 NF, 2 SR		WOR	SLT
WY	5DN92W	18	CNESE	UNIT	9		N	8 SU		WDR	SLT
WY	50N92W	19	CSWNE	UNIT	4		N	8 SU		WOR	SLT
WY	50N92W	19	SESW	MOBIL	F24		N	D&A	SESW	WDR	SLT
WY	50N92W	2D	CSENW	MO8IL	1		N	8 SU		WDR	SLT

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-551-CT4-340087
POTENTIAL DRAINAGE - WELLS IDENTIFIED
PROPRIETARY DATA

STATE	TOWNSHIP/ RANGE	SECTION	QUARTER/ QUARTER	WELL NAME	WELL NUMBER	STATUS	POTENTIALLY OFFENDING (Y,N)	DESCRIPTION	POTENTIALLY OFFENDED LEASE	BLM OFFICE	WORKER
WY	50N92W	20	CSESE	UNIT	7		N	O&A		WOR	SLT
WY	50N92W	28	CSWSW	WALTERS	2		N	6 NF, 2 SU		WOR	SLT
WY	50N92W	28	NESW	KIMBARK-PAT	23		N	D&A		WOR	SLT
WY	50N92W	29	CSWNW	UNIT	6		N	7 SU, 1 NF		WOR	SLT
WY	50N92W	29	NESWNE	UNIT	11		N	P&A		WOR	SLT
WY	50N92W	32	CNENE	UNIT	5		N	2 SU, 6 NF		WOR	SLT
WY	50N92W	32	SWSENW	UNIT	14		N	O&A		WOR	SLT
WY	50N92W	33	CSENW	UNIT	10		N	P&A		WOR	SLT
WY	50N92W	33	NENWNW	GULF	1		N	WATER WELL		WOR	SLT
WY	50N92W	33	S2NESE	THOMAS	1	PDS	Y	DRAINING PHOS. PA IN MANDERSON UNIT	PHOS PA	WOR	SLT
WY	50N92W	34	NESWSE	GULF-SMITH	1		N	8 NF		WOR	SLT
WY	50N92W	34	NWSWSE	PREVO	6		N	4 NF, 4 SU		WOR	SLT
WY	50N92W	7	NWNW	NEWMAN	1		N	O&A		WOR	SLT
WY	50N92W	8	CSESE	FEO-HOLDEN	1		N	D&A		WOR	SLT
WY	50N93W	11	NWNE	UNIT	13		N	5 SU, 3 SR		WOR	SLT
WY	50N93W	11	NWNW	NIELSON	1	PDS	Y	DRAINING UNIT	B043409A	WOR	SLT
WY	50N93W	11	NWNW	NIELSON	1	PDS	Y	DRAINING UNIT	B44078	WOR	SLT
WY	50N93W	11	NWNW	NIELSON	1	PDS	Y	NONFEDERAL DRAINING FEDERAL	US	WOR	SLT
WY	50N93W	11	NWNW	NIELSON	1	POS	Y	DRAINING UNIT	W80180	WOR	SLT
WY	50N93W	12	CSESE	SOHIO	44-6		N	8 SU		WOR	SLT
WY	50N93W	12	CSWSW	UNIT	8		N	8 SU		WOR	SLT
WY	50N93W	12	SENW	MOBIL	22		N	O&A		WOR	SLT
WY	50N93W	13	SESENE	UNIT	14		N	O&A		WOR	SLT
WY	50N93W	13	SWSESW	MOBIL	F24		N	3 LR, 3 SR, 2 NF		WOR	SLT
WY	50N93W	14	NWNE	BRAUN&NEWMAN	1		N	5 PW, 2 NF, 1 SR		WOR	SLT
WY	50N93W	14	SESWNW	SPENCER	1		N	O&A		WOR	SLT
WY	50N93W	14	SWNW	SPENCER	1		N	D&A		WOR	SLT
WY	50N93W	15	NESE	MOCKLER	1		N	O&A		WOR	SLT
WY	50N93W	23	NENE	TSCC	1	PDS	Y	NONFEDERAL DRAINING FEDERAL	W23878	WOR	SLT
WY	50N93W	23	NENE	TSCC	1	PDS	Y	NONFEDERAL DRAINING CA	W60672	WOR	SLT
WY	50N93W	24	SENENE	UNIT	12	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE	W60672	WOR	SLT
WY	50N93W	24	SWNESE	GEN. CRUDE	9		N	3 SR, 4 NF, 1 LR		WOR	SLT
WY	50N93W	25	CNENE	SYKES-MOBLEY	1		N	D&A		WOR	SLT
WY	50N93W	3	CSWNE	KOET	1		N	D&A		WOR	SLT
WY	50N93W	3	SWSWNE	KANSAS-PAT	1		N	D&A		WOR	SLT
WY	51N102N	26	SWSENW	HUSKY	11		N	8 SL		WOR	SLT
WY	51N102W	13	NWSE	SABINE	10		N	D&A		WOR	SLT
WY	51N102W	14	NWSWSW	KRAMPERT	1		N	O&A		WOR	SLT
WY	51N102W	14	SESW	TRICENTRAL	2	PPW	N	D&A		WOR	SLT
WY	51N102W	14	SWSW	FEDERAL	1		N	5 SL, 1 SR, 2 LR		WOR	SLT

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-551-CT4-340087
POTENTIAL DRAINAGE - WELLS IDENTIFIED
PROPRIETARY DATA

STATE	TOWNSHIP/ RANGE	SECTION	QUARTER/ QUARTER	WELL NAME	WELL NUMBER	STATUS	POTENTIALLY OFFENDING (Y,N)	DESCRIPTION	POTENTIALLY OFFENDED LEASE	BLM OFFICE	WORKER
WY	51N102W	15	CNWSE	BREHM	1		N	D&A		WOR	SLT
WY	51N102W	15	NWNE	PECKLER-FED	31		N	D&A		WOR	SLT
WY	51N102W	22	NENE	GOLDMARK	4		N	3 SL, 5 LR		WOR	SLT
WY	51N102W	22	NENE	GOLDMARK	9		N	3 SL, 2 SR, 3 LR		WOR	SLT
WY	51N102W	22	NENESE	GOLDMARK	3	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE	C063922	WDR	SLT
WY	51N102W	22	NENESE	GOLOMARK	3	POS	Y	NONCOMPETITIVE DRAINING COMPETITIVE	W37274	WOR	SLT
WY	51N102W	22	NESE	GOLOMARK	7		N	5 SL, 3 SR		WOR	SLT
WY	51N102W	22	NESESE	GOLOMARK	2		N	5 SL, 3 LR		WOR	SLT
WY	51N102W	22	NWNE	LEDBETTER	6		N	D&A		WOR	SLT
WY	51N102W	22	SENE	HALFMOON	5	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE	US	WOR	SLT
WY	51N102W	22	SESENE	MORRISON	33	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE	W71491	WOR	SLT
WY	51N102W	22	SESESE	GOVERNMENT	1	PPW	N	5 SL, 3 LR		WOR	SLT
WY	51N102W	23	NENW	MORRISON	35		N	8 SL		WOR	SLT
WY	51N102W	23	NENWSW	HUSKY	13		N	7 SL, 1 SR		WOR	SLT
WY	51N102W	23	NESESW	HUSKY	4		N	8 SL		WOR	SLT
WY	51N102W	23	NESWNW	HUSKY	1		N	8 SL		WOR	SLT
WY	51N102W	23	NESWSW	WEAOICK	2		N	8 SL		WOR	SLT
WY	51N102W	23	NESWSW	HUSKY	2A		N	8 SL		WOR	SLT
WY	51N102W	23	NWNESW	MORRISON	2		N	8 SL		WOR	SLT
WY	51N102W	23	NWNW	MORRISON	32	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE	C063922	WOR	SLT
WY	51N102W	23	NWNW	MARATHON	41	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE	W71491	WOR	SLT
WY	51N102W	23	NWNW	MARATHON	41	POS	Y	NONCOMPETITIVE DRAINING COMPETITIVE	W89282	WOR	SLT
WY	51N102W	23	NWSE	HUSKY	38		N	8 SL		WOR	SLT
WY	51N102W	23	NWSESW	MORRISON	20		N	8 SL		WOR	SLT
WY	51N102W	23	NWSW	MORRISON	31	POS	Y	NONCOMPETITIVE DRAINING COMPETITIVE	W71491	WOR	SLT
WY	51N102W	23	NWSWNW	MORRISON	27	PDS	Y	TENSLEEP DRAINING PHOSPHORIA	W71491	WOR	SLT
WY	51N102W	23	SENW	MORRISON	34		N	8 SL		WOR	SLT
WY	51N102W	23	SENW	MORRISON	37		N	8 SL		WOR	SLT
WY	51N102W	23	SENWSW	MORRISON	23		N	8 SL		WOR	SLT
WY	51N102W	23	SESESW	MORRISON	15		N	5 SL, 2 SR, 1 PPW		WDR	SLT
WY	51N102W	23	SWNESW	MORRISON	12		N	8 SL		WDR	SLT
WY	51N102W	23	SWNWSW	KRAMPERT	1		N	WATER WELL		WDR	SLT
WY	51N102W	23	SWSENW	MORRISON	25		N	8 SL		WOR	SLT
WY	51N102W	23	SWSESW	MORRISON	24		N	5 SL, 3 SR		WOR	SLT
WY	51N102W	23	SWSESW	MORRISON	8		N	5 SL, 3 SR		WOR	SLT
WY	51N102W	23	SWSW	MORRISON	14		N	8 SL		WOR	SLT
WY	51N102W	23	SWSW	MORRISON	30		N	3 SL, 1 PW, 2 PPW, 2 SR		WOR	SLT
WY	51N102W	23	SWSWNW	HUSKY	21		N	5 SL, 2 SR, 1 PW		WOR	SLT
WY	51N102W	23	WSWSW	MORLEY	1		N	O&A		WOR	SLT
WY	51N102W	25	SWSW	SABINE	1		N	8 SL		WOR	SLT

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-551-CT4-340087
POTENTIAL DRAINAGE - WELLS IDENTIFIED
PROPRIETARY DATA

STATE	TOWNSHIP/ RANGE	SECTION	QUARTER/ QUARTER	WELL NAME	WELL NUMBER	STATUS	POTENTIALLY OFFENDING (Y,N)	DESCRIPTION	POTENTIALLY OFFENDED LEASE	BLM OFFICE	WORKER
WY	51N102W	26	CNWNE	HUSKY	6		N	3 LR, 5 SL		WOR	SLT
WY	51N102W	26	NENENW	MORRISON	3	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE W44441		WOR	SLT
WY	51N102W	26	NENENW	HUSKY	9	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE W44441		WOR	SLT
WY	51N102W	26	NENESW	HUSKY	7		N	8 SL		WOR	SLT
WY	51N102W	26	NESENW	HUSKY	5		N	7 SL 1 PW		WOR	SLT
WY	51N102W	26	NESW	MORRISON	40		N	8 SL		WOR	SLT
WY	51N102W	26	NESWNW	MORRISON	19		N	8 SL		WOR	SLT
WY	51N102W	26	NWNENW	MORRISON	18		N	3 SR, 5 SL		WOR	SLT
WY	51N102W	26	NWNWNE	GEIGER	1	PPW	N	D&A		WOR	SLT
WY	51N102W	26	NWNWNW	MORRISON	22	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE W71491		WOR	SLT
WY	51N102W	26	NWSE	FLATHEAD	1		N	D&A		WOR	SLT
WY	51N102W	26	NWSENW	HUSKY	10		N	8 SL		WOR	SLT
WY	51N102W	26	SENENW	HUSKY	17	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE W44441		WOR	SLT
WY	51N102W	26	SENWNW	WEADICK	1		N	8 SL		WOR	SLT
WY	51N102W	26	SESENW	MORRISON	28		N	1 PW, 7 SL		WOR	SLT
WY	51N102W	26	SESWNW	MORRISON	26		N	8 SL		WOR	SLT
WY	51N102W	26	SWNENW	KRAMPERT	2		N	WATER WELL		WOR	SLT
WY	51N102W	26	SWNW	MORRISON	29	PDS	Y	NONCOMPETITIVE DRAINING COMPETITIVE W71491		WOR	SLT
WY	51N102W	26	SWNWNE	HUSKY	16		N	3 SL, 5 LR		WOR	SLT
WY	51N102W	27	NENE	GOLDMARK	5		N	5 SL, 3 SL		WOR	SLT
WY	51N102W	27	NENENE	AZTEC	1		N	5 SL, 3 LR		WOR	SLT
WY	51N102W	27	NENENE	GOLDMARK	3		N	5 SL, 3 LR		WOR	SLT
WY	51N102W	27	NESE	FEDERAL	4		N	D&A		WOR	SLT
WY	51N102W	27	SENE	AZTEC	2		N	5 SL, 3 LR		WOR	SLT
WY	51N102W	34	SESE	APACHE	16		N	D&A		WOR	SLT
WY	51N102W	35	NENE	HUNT	1		N	D&A		WOR	SLT
WY	51N102W	35	NWSW	HUNT	12		N	D&A		WOR	SLT
WY	51N102W	35	SWSW	STATE	13		N	D&A		WOR	SLT
WY	55N95W	28	SWSE	AQUITAINE	3		N	8 SU		WOR	SLT
WY	55N95W	28	SWSW	DRWENSKI	1	PDS	Y	DRAINING 2 UNITS	B040639	WOR	SLT
WY	55N95W	28	SWSW	DRWENSKI	1	PDS	Y	DRAINING 2 UNITS	W01390A	WOR	SLT
WY	55N95W	28	SWSW	DRWENSKI	1	PDS	Y	DRAINING 2 UNITS	W35904	WOR	SLT
WY	55N95W	29	NENESW	SOHIO	4		N	8 SU		WOR	SLT
WY	55N95W	29	NESW	SOHIO	18		N	WATER INJECTION WELL		WOR	SLT
WY	55N95W	29	NWSESW	SOHIO	11		N	8 SU		WOR	SLT
WY	55N95W	29	NWSW	SOHIO	10		N	8 SU		WOR	SLT
WY	55N95W	29	NWSWSE	SOHIO	8		N	8 SU		WOR	SLT
WY	55N95W	29	NWSWSW	SOHIO	17		N	WATER INJECTION WELL		WOR	SLT
WY	55N95W	29	SENWSE	UNIT	6		N	8 SU		WOR	SLT
WY	55N95W	29	SESENW	SOHIO	15		N	D&A		WOR	SLT

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-551-CT4-340087
POTENTIAL DRAINAGE - WELLS IDENTIFIED
PROPRIETARY DATA

STATE	TOWNSHIP/ RANGE	SECTION	QUARTER/ QUARTER	WELL NAME	WELL NUMBER	STATUS	POTENTIALLY OFFENDING (Y,N)	DESCRIPTION	POTENTIALLY OFFENDED LEASE	BLM OFFICE	WORKER
WY	55N95W	29	SESESE	SOHIO	12		N	D&A		WOR	SLT
WY	55N95W	29	SESESE	SOHIO	12	PPW	Y	2 PDS, 6 SU		WOR	SLT
WY	55N95W	29	SESESE	SOHIO	12	PDS	Y	LEASE OUTSIDE OF PA	8040639	WOR	SLT
WY	55N95W	29	SESESE	SOHIO	12	PDS	Y	LEASE OUTSIDE OF PA	W59416	WOR	SLT
WY	55N95W	29	SESW	SOHIO	19	PDS	Y	OFFENDED LEASE OUTSIDE OF PA	W40584	WOR	SLT
WY	55N95W	29	SESWNW	SOHIO	14		N	8 SU		WOR	SLT
WY	55N95W	29	SESWSE	SOHIO	9		N	8 SU		WOR	SLT
WY	55N95W	29	SWSENE	HAROMAN	1		N	D&A		WOR	SLT
WY	55N95W	29	SWSW	SOHIO	13	POS	Y	OFFENDED LEASE OUTSIDE OF PA	W40584	WOR	SLT
WY	55N95W	30	NWNE	DIABLO	1	POS	Y	DRAINING UNIT	W40584	WOR	SLT
WY	55N95W	30	NWNW	GOVT-GRAHAM	4		N	D&A		WOR	SLT
WY	55N95W	30	SENE	GOVERNMENT	2		N	D&A		WOR	SLT
WY	55N95W	30	SENWNW	AMINOIL	1		N	D&A		WOR	SLT
WY	55N95W	30	SENWSE	UNIT	7		N	D&A		WOR	SLT
WY	55N95W	30	SENWSE	UNIT	7X		N	D&A		WOR	SLT
WY	55N95W	30	SESENE	GOVERNMENT	1		N	8 SU		WOR	SLT
WY	55N95W	32	CNWNE	SOHIO	3	POS	Y	DRAINING UNIT	W69531	WOR	SLT
WY	55N95W	32	NENESE	SOHIO	5		N	D&A		WOR	SLT
WY	55N95W	32	SWNENE	SOHIO	16		N	8 SU		WOR	SLT
WY	55N95W	33	NENE	AQUITAINE	2		N	8 SU		WOR	SLT
WY	55N95W	33	NESE	GOVERNMENT	5		N	8 SU		WOR	SLT
WY	55N95W	33	NWNE	GOVERNMENT	1		N	8 SU		WOR	SLT
WY	55N95W	33	NWNESE	HANSEN	1		N	D&A		WOR	SLT
WY	55N95W	33	NWSENE	CARTER	1		N	D&A		WOR	SLT
WY	55N95W	33	SENE	AQUITAINE	2		N	8 SU		WOR	SLT
WY	55N95W	33	SESENW	UNIT	1		N	D&A		WOR	SLT
WY	55N95W	33	SWNE	GOVERNMENT	4		N	8 SU		WOR	SLT
WY	57N100W	10	CSWSE	PHILLIPS	1		N	D&A		WOR	SLT
WY	57N100W	16	NENW	CHAMPLIN-ST.	21	POS	Y	NONFEDERAL DRAINING FEDERAL	W89274	WOR	SLT
WY	57N100W	16	NESW	CHAMPLIN-ST.	23		N	8 NF		WOR	SLT
WY	57N100W	16	NWSE	STATE	56		N	8 NF		WOR	SLT
WY	57N100W	16	NWSWSE	CHAMPLIN-ST.	34		N	8 NF		WOR	SLT
WY	57N100W	16	SWNE	CHAMPLIN-ST.	32		N	8 NF		WOR	SLT
WY	57N100W	16	SWNW	CHAMPLIN-ST.	12		N	8 NF		WOR	SLT
WY	57N100W	16	SWSW	CHAMPLIN-ST.	14		N	D&A		WOR	SLT
WY	57N100W	19	NESW	BURLINGTON	1		N	D&A		WOR	SLT
WY	57N100W	20	SWSE	APM-FEDERAL	34		N	D&A		WOR	SLT
WY	57N100W	21	NESW	BURLING.-PAT	23		N	D&A		WOR	SLT
WY	57N100W	21	W2NWNE	NO. PACIFIC	1		N	D&A		WOR	SLT
WY	57N100W	4	NENWNE	TEXACO	62-4	PDS	Y	UNIT DRAINING FEDERAL LEASE	W42258	WOR	SLT

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-551-CT4-340087
POTENTIAL DRAINAGE - WELLS IDENTIFIED
PROPRIETARY DATA

STATE	TOWNSHIP/ RANGE	SECTION	QUARTER/ QUARTER	WELL NAME	WELL NUMBER	STATUS	POTENTIALLY DFFENDING (Y,N)	DESCRIPTION	POTENTIALLY OFFENDED LEASE	BLM OFFICE	WDRKER
WY	57N100W	4	NWNENW	TEXACO	31	PDS	Y	UNIT DRAINING FEDERAL	C067672	WOR	SLT
WY	57N100W	4	NWNWNE	TEXACO	51-4	PDS	Y	UNIT DRAINING FEDERAL LEASE	W42258	WOR	SLT
WY	57N100W	4	NWNWNW	TEXACO	1	POS	Y	UNIT DRAINING FEDERAL LEASE	C067672	WOR	SLT
WY	57N100W	4	NWSWNE	TEXACO	53-4		N	5 SU, 3 NF		WOR	SLT
WY	57N100W	5	SENE	MCALESTER	8		N	D&A		WOR	SLT
WY	57N100W	9	SWSW	BURLINGTON	13		N	D&A		WDR	SLT
WY	58N100W	28	NESW	TEXACO	46		N	D&A		WDR	SLT
WY	58N100W	28	NWNESE	TEXACO	75		N	5 SU, 3 NF		WOR	SLT
WY	58N100W	28	NWSE	TEXACO	55	PPW	N	3 SU, 2 PPW, 3 NF		WOR	SLT
WY	58N100W	28	NWSE	TEXACO	66		N	O&A		WOR	SLT
WY	58N100W	28	NWSESW	TEXACO	37		N	6 SU, 2 NF		WOR	SLT
WY	58N100W	28	SENW	TEXACO	33		N	D&A		WOR	SLT
WY	58N100W	28	SESE	TEXACO	77	PDS	Y	UNIT DRAINING FEDERAL LEASE	W42258	WOR	SLT
WY	58N100W	28	SESESW	TEXACO	48	PPW	Y	2 PDS, 2 NF, 4 PPW		WOR	SLT
WY	58N100W	28	SESESW	TEXACO	48	POS	Y	UNIT DRAINING FEDERAL LEASE	CD67672	WOR	SLT
WY	58N100W	28	SESWSE	TEXACO	68	PDS	Y	2 PDS, 3 PPW, 3 NF		WOR	SLT
WY	58N100W	28	SESWSE	TEXACO	68	PDS	Y	UNIT DRAINING FEDERAL LEASE	C067672	WDR	SLT
WY	58N100W	28	SESWSE	TEXACO	68	PDS	Y	UNIT DRAINING FEDERAL LEASE	W42258	WDR	SLT
WY	58N100W	33	NENE	TEXACO-PAT	81	PPW	Y	1 PDS, 1 PPW, 5 SU, 1 NF		WDR	SLT
WY	58N100W	33	NENE	TEXACO-PAT	81	POS	Y	UNIT DRAINING FEDERAL LEASE	W42258	WOR	SLT
WY	58N100W	33	NWNENW	NPRR	31	PDS	Y	UNIT DRAINING FEDERAL LEASE	C067672	WDR	SLT
WY	58N100W	33	NWNESW	NPRR	35	PDS	Y	UNIT DRAINING FEDERAL LEASE	C067672	WOR	SLT
WY	58N100W	33	NWNWSE	TEXACO-PAT	55	PDS	Y	UNIT ORAINING FEDERAL LEASE	W42258	WOR	SLT
WY	58N100W	33	NWSENW	NPRR	33	PDS	Y	UNIT DRAINING FEDERAL LEASE	C067672	WOR	SLT
WY	58N100W	33	NWSWNE	NPRR	53	PDS	Y	UNIT DRAINING FEDERAL LEASE	W42258	WDR	SLT
WY	58N100W	33	NWSWNW	NPRR	K133		N	D&A		WOR	SLT
WY	58N100W	33	NWSWSE	NPRR	57	PDS	Y	UNIT DRAINING FEDERAL LEASE	W42258	WOR	SLT
WY	58N100W	33	SENENW	NPRR	42	PPW	Y	2 PDS, 2 PW, 4 NF		WOR	SLT
WY	58N100W	33	SENENW	NPRR	42	PDS	Y	UNIT DRAINING FEDERAL LEASE	C067672	WOR	SLT
WY	58N100W	33	SENWNE	NO. PACIFIC	62	PPW	Y	1 PDS, 1 PPW, 1 NF, 5 SU		WOR	SLT
WY	58N100W	33	SENWNE	NO. PACIFIC	62	PDS	Y	UNIT DRAINING FEDERAL LEASE	W42258	WOR	SLT
WY	58N100W	33	SENWNW	NPRR	7		N	D&A		WOR	SLT
WY	58N100W	33	SESWNE	NO. PACIFIC	64	PDS	Y	UNIT DRAINING FEDERAL LEASE	W42258	WOR	SLT
WY	58N100W	33	SWSENE	NO. PACIFIC	74	PDS	Y	UNIT ORAINING FEDERAL LEASE	W42258	WDR	SLT
WY	58N100W	33	SWSENE	NPRR	74-A	PDS	Y	UNIT ORAINING FEDERAL LEASE	W42258	WOR	SLT
WY	58N100W	34	NWSWNW	HALL	1		N	O&A		WOR	SLT
WY	58N100W	34	SWNW	DOW	1		N	D&A		WOR	SLT
WY	58N100W	34	SWSWNW	YEGEN	1	PPW	N	O&A		WDR	SLT

APPENDIX E

Sample Work Measures

SAMPLE WORK MEASURES

KGS Program

Element	Weighting Factor	Total
(No. of Wells Evaluated)	x 2.5 =	
(No. of Acres Added)	x 1.0 =	
	Total Points	

Drainage Program

Case Type	Weighting Factor	Total
(No. of Wells Reviewed)	x 1.0 =	
(No. of Letters Sent)	x 2.0 =	
(No. of Detailed Evaluations Prepared)	x 10.0 =	
(No. of Appeals Processed)	x 20.0 =	
	Total Points	

This proposed system measures KGS and drainage according to a weighted average point system. In each program, tasks are assigned certain points. In the KGS program, for each acre added to a KGS, the office would be credited with one point; for each well evaluated in the KGS, 2.5 points would be credited. If, for example, a KGS study added 1000 acres and involved the review of 25 wells, the office would receive credit for 1052.5 points in the Financial Management System.

APPENDIX F

Summary of Data Base Comparisons

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

ALBUQUERQUE, NEW MEXICO, DISTRICT OFFICE

ITEM SUMMARY	TOTAL ITEMS SOUGHT	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	1	0	0	0
Unit files	3	0	0	0
Lease files	36	0	1	5
Lease rec. cards	36	1	6	7
ALMRS	24	0	5	8
Well jackets	82	15	0	0
Wells on base maps	82	0	41	0
IWRs	82	1	41	3
P.I. logs on film	82	7	21	2
M.J. Systems log fiche	82	6	25	3

COMPARISON BY DATA SOURCE	OG Plats		T & R file		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	0	0	0	0	0	0	0	0			0	0

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	0	0	0	0	0	0	0	0			0	0

	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	1	5	5	8	0	0	0	0	6	7	12	20

Well Data	Well jacket		O & G base maps		IWRs		P.I. logs		M.J. systems		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	0	NA	NA	10	4	19	11	25	12	54	26
Well Name/No.	0	0	5	0	2	4	7	11	7	12	21	27
Well Status	0	0	36	0	36	4	NA	NA	NA	NA	72	4
Prod. Interval Name	0	0	6	10	5	2	NA	NA	NA	NA	11	12
Perforated Interval	0	0	NA	NA	14	5	NA	NA	NA	NA	14	5
Total Items Checked Per Category	82		82		82		82		82			

NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

BAKERSFIELD, CALIFORNIA, DISTRICT OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	10	0	0	0
Unit files	10	0	0	0
CA files	10	0	0	0
Lease files	20	8	0	4
Lease rec. cards	20	10	8	0
ALMRS	NA	NA	NA	NA
Well jackets	44	4	0	0
Wells on base maps	100	0	17	58
Monthly rpts of operations	30	1	9	0
IWRs	100	9	52	12
Well logs	100	43	2	0

COMPARISON BY DATA SOURCE	KGS files		OG plats		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	0	0	4	1	2	3	2	1			8	5

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	0	0	2	7	1	2	2	8			5	17

	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	0	4	NA	NA	NE	NE	NE	NE	8	10	8	14

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		Well Logs		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	4	12	8	15	9	NA	NA	2	43	29	64
Well Name/No.	0	4	2	0	1	10	NA	NA	0	43	3	57
Well Status	0	4	1	0	6	12	NA	NA	NA	NA	7	16
Prod. Interval Name	0	4	0	48	7	14	NA	NA	NA	NA	7	66
Perforated Interval	0	4	2	50	23	12	NA	NA	NA	NA	25	66
Total Items Checked Per Category	44		100		100				100			

NE: Not Examined
NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

CANON CITY, COLORADO, DISTRICT OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
Unit files	10	0	3	7
Lease files	20	12	0	4
Lease rec. cards	20	13	1	7
ALMRS	20	1	4	1
Well jackets	102	83	0	0
Wells on base maps	102	12	2	0
IWRs	102	91	0	11

COMPARISON BY DATA SOURCE	OG Plats		T & R file		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	0	3	NA	NA	NA	NA	NA	NA	0	7	0	10

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	3	7	2	2	NA	NA	NA	NA	1	3	6	12

	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	0	16	4	2	NA	NA	0	0	1	20	5	38

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		M.J. Systems		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	83	0	12	0	91	NA	NA	NE	NE	0	186
Well Name/No.	0	83	0	12	0	91	NA	NA	NE	NE	0	186
Well Status	0	83	2	12	0	102	NA	NA	NE	NE	2	197
Prod. Interval Name	0	83	0	12	0	102	NA	NA	NE	NE	0	197
Perforated Interval	0	83	NA	NA	0	102	NA	NA	NE	NE	0	185
Total Items Checked Per Category	102		102		102		0		0			

NE: Not Examined
NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

CASPER, WYOMING, DISTRICT OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	3	0	0	0
Unit files	10	0	1	1
Lease files	17	1	4	19
Lease rec. cards	0	17	0	0
ALMRS	18	0	4	1
Well jackets	0	0	0	0
IWRs	101	21	26	29
Wells on base maps	101	20	20	58
P.I. cards	101	20	38	23
M.J. Systems log fiche	101	20	19	22

COMPARISON BY DATA SOURCE	OG Plats		T & R file		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	0	3	0	0	2	0	0	1	0	0	2	5

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	1	1	1	3	2	1	0	1	0	0	4	6

	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	4	19	4	1	0	0	0	0	0	17	8	19

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		M.J. Systems		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	15	9	48	8	25	11	22	13	22	41	132
Well Name/No.	0	15	14	27	12	25	15	22	1	20	32	109
Well Status	1	15	9	22	6	25	19	22	NA	NA	25	84
Prod. Interval Name	0	11	0	12	3	9	9	3	NA	NA	12	35
Perforated Interval	0	14	0	0	7	21	11	15	NA	NA	18	50
Total Items Checked Per Category	101		101		101		101		101			

NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

CRAIG, COLORADO, DISTRICT OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	NA	NA	NA	NA
Unit files	10	0	4	1
Lease files	20	7	0	5
Lease rec. cards	NA	NA	NA	NA
ALMRS	20	0	12	20
Well jackets	86	24	0	0
Wells on base maps*	117	56	13	117
IWRs	117	12	18	17
P.I. cards	117	48	23	31
M.J. Systems log fiche	117	43	11	3
Monthly Rpts. Oper.	43	13	16	1

COMPARISON BY DATA SOURCE	OG Plats		T & R file		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	5	0	NA	NA	0	1	0	0	NE	NE	5	1

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	4	1	1	0	NA	NA	0	9	NE	NE	5	10

	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	0	12	12	0	NA	NA	12	0	NA	NA	24	12

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		M.J. Systems		Monthly Prod. reports		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	0	NA	NA	5	3	5	48	5	36	4	17	19	104
Well Name/No.	0	0	NA	NA	2	4	6	48	6	36	0	17	14	105
Well Status	0	0	NA	NA	15	23	10	75	NA	NA	12	16	37	114
Prod. Interval Name	0	0	NA	NA	2	26	2	85	NA	NA	NA	NA	4	111
Perforated Interval	0	0	NA	NA	6	26	7	61	NA	NA	NA	NA	13	107
Total Items Checked Per Category					117		117		117		43			

NE: Not Examined
NA: Not Available
E: Errors
O: Omissions
*: Work Maps

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

COLORADO STATE OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	13	0	0	0
Unit files	10	1	0	0
CA files	10	0	0	0
Lease files	20	3	0	5
Lease rec. cards	20	10	3	7
ALMRS	20	13	2	7
Well jackets	NA	NA	NA	NA
Wells on base maps	NA	NA	NA	NA
Monthly rpt of operations	NA	NA	NA	NA
IWRs	120	83	0	2
P.I. cards	120	57	6	5
Well logs	120	55	12	0

COMPARISON BY DATA SOURCE	KGS files		OG Plats		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	0	0	3	3	1	3	NA	NA			4	6

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	0	1	1	2	4	0	NA	NA			5	3

	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	0	8	2	20	NA	NA	NE	NE	3	17	5	45

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		Well logs		Monthly Rpt. of Operations		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O	E	O
Operator	NA	NA	NA	NA	0	83	1	57	9	55	NE	NE	10	195
Well Name/No.	NA	NA	NA	NA	0	83	0	57	4	55	NE	NE	4	195
Well Status	NA	NA	NA	NA	0	85	4	57	NA	NA	NE	NE	4	142
Prod. Interval Name	NA	NA	NA	NA	0	85	2	62	NA	NA	NA	NA	2	147
Perforated Interval	NA	NA	NA	NA	0	83	5	58	NA	NA	NA	NA	5	141
Total Items Checked Per Category					120		120		120					

NE: Not Examined
NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

DICKINSON, NORTH DAKOTA, DISTRICT OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	10	1	4	3
Unit files	10	1	0	1
CA files	10	0	0	0
Lease files	20	2	0	7
Lease rec. cards	20	1	16	14
ALMRS	20	0	3	0
Well jackets	54	0	0	0
Wells on base maps	100	0	20	26
Monthly rpt of operations	63	4	0	0
IWRs	100	18	16	5
P.I. cards	100	50	27	5
M.J. Systems log fiche	100	1	0	0

COMPARISON BY DATA SOURCE	KGS files		OG Plats		KGS notebook		O & G base maps		KGS index map				Total count	
	E	O	E	O	E	O	E	O	E	O			E	O
KGS Data	4	4	2	0	NA	NA	5	0					11	4
	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map				Total count	
	E	O	E	O	E	O	E	O	E	O			E	O
Unit Data	0	1	3	2	0	2	2	0					6	4
	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards				Total count	
	E	O	E	O	E	O	E	O	E	O			E	O
Lease Data	0	9	3	0	NE	NE	NE	NE	16	15			19	24
Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		Well Logs		Monthly Rpt. of Operations		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	0	18	4	7	21	16	50	0	1	0	0	41	76
Well Name/No.	0	0	1	0	0	21	2	50	0	1	0	0	3	72
Well Status	0	0	3	20	4	21	1	97	NA	NA	0	0	8	138
Prod. Interval Name	0	0	19	26	9	23	6	54	NA	NA	NA	NA	34	103
Perforated Interval	0	0	1	93	15	21	10	55	NA	NA	NA	NA	26	169
Total Items Checked Per Category	54		100		100		100		100		63			

NE: Not Examined
NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-3400B7
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

LEWISTOWN, MONTANA, DISTRICT OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	NE	NE	NE	NE
Unit files	10	0	0	0
CA files	10	0	0	0
Lease files	20	0	0	0
AFS	20	1	3	0
ALMRS	20	0	7	0
Well jackets	40	1	0	0
Wells on base maps	100	3	1	0
Monthly rpt of operations	NE	NE	NE	NE
IWRs	100	1	19	1
P.I. cards	100	95	3	2
M.J. Systems log fiche	100	96	1	0

COMPARISON BY DATA SOURCE	KGS files		OG Plats		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE		

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	0	0	0	0	7	0	0	0			7	0

	Lease files		ALMRS		O & G base maps		OG plats		AFS printouts		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	0	0	7	0	NE	NE	NE	NE	3	0	10	0

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		M.J. Systems		Monthly Rpt. of Operations		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	1	NA	NA	16	1	1	95	1	96	NE	NE	18	193
Well Name/No.	0	1	1	3	0	1	0	95	0	96	NE	NE	1	196
Well Status	0	1	0	3	3	1	0	95	NA	NA	NE	NE	3	100
Prod. Interval Name	0	1	0	3	1	2	2	97	NA	NA	NA	NA	3	103
Perforated Interval	0	1	NA	NA	2	2	1	97	NA	NA	NA	NA	3	100
Total Items Checked Per Category	40		100		100		100		100					

NE: Not Examined
NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

MILES CITY, MONTANA, DISTRICT OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	10	0	1	1
Unit files	10	0	3	7
CA files	10	4	0	0
Lease files	20	2	0	8
Lease rec. cards	20	2	14	7
ALMRS	NA	NA	NA	NA
Well jackets	23	11	0	2
Wells on base maps	100	3	12	51
Monthly rpt of operations	19	1	0	0
IWRs	100	3	8	2
P.I. cards	100	25	25	39
Well logs	200	63	24	1

COMPARISON BY OATA SOURCE	KGS files		OG Plats		T & R plats		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Oata	1	1	1	1	7	3	3	1			12	6

	Unit files		OG plats		T & R plats		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Oata	3	7	0	0	2	8	0	0			5	15

	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Oata	0	10	NA	NA	NE	NE	NE	NE	14	9	14	19

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		Well logs		Monthly Rpt. of Operations		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	11	9	7	5	3	11	25	20	64	0	1	45	111
Well Name/No.	0	11	1	4	0	3	0	28	6	64	0	1	7	111
Well Status	0	11	1	2	4	3	5	64	NA	NA	0	1	10	81
Prod. Interval Name	0	13	2	17	1	5	4	28	NA	NA	NA	NA	7	63
Perforated Interval	0	11	1	54	1	4	17	26	NA	NA	NA	NA	19	95
Total Items Checked Per Category	23		100		100		100		200		19			

NE: Not Examined
NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

MONTANA STATE OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	13	3	3	3
Unit files	10	0	0	0
CA files	NE	NE	NE	NE
Lease files	12	0	0	0
Lease rec. cards	NA	NA	NA	NA
ALMRS	12	0	12	0
Well jackets	NA	NA	NA	NA
Wells on base maps	141	5	23	53
Monthly rpt of operations	NE	NE	NE	NE
IWRs	142	17	0	11
P.I. cards	141	14	61	2
Well logs	141	14	34	1

COMPARISON BY DATA SOURCE	T&R files		OG Plats		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	3	3	2	3	1	0	1	2			7	8

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	0	0	0	3	NE	NE	2	3			2	6

	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	0	0	12	0	NE	NE	0	0	NA	NA	12	0

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		Well logs		Monthly Rpt. of Operations		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O	E	O
Operator	NA	NA	23	36	NE	NE	23	14	24	14	NE	NE	70	64
Well Name/No.	NA	NA	4	3	NE	NE	39	14	39	15	NE	NE	82	33
Well Status	NA	NA	18	3	NE	NE	26	14	NA	NA	NE	NE	44	17
Prod. Interval Name	NA	NA	2	11	NE	NE	27	16	NA	NA	NA	NA	29	27
Perforated Interval	NA	NA	2	0	NE	NE	44	16	NA	NA	NA	NA	16	16
Total Items Checked Per Category			141		142		141		141					

NE: Not Examined
NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

NEVADA STATE OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	6	0	0	0
Unit files	10	0	0	0
CA files	10	0	0	0
Lease files	20	1	2	10
Serial Reg. Pages	20	2	10	0
Well jackets	100	0	0	1
Wells on base maps	100	36	12	65
Monthly rpt of operations	40	7	24	0
IWRs	100	32	27	1
P.I. cards	100	37	23	21
Well logs	100	40	8	0

COMPARISON BY DATA SOURCE	KGS files		OG Plats		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	0	0	1	0	1	0	1	0			3	0

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	0	0	4	2	0	9	1	0			5	11

	Lease files		ALMRS		O & G base maps		OG plats		Serial Reg. Pages		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	2	10	NA	NA	NE	NE	NE	NE	10	2	17	24

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		Well logs		Monthly Rpt. of Operations		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	1	1	78	11	32	9	37	8	40	20	7	49	195
Well Name/No.	0	1	0	50	0	32	0	37	0	40	0	7	0	167
Well Status	0	1	10	36	6	32	4	42	NA	NA	4	7	24	118
Prod. Interval Name	0	1	1	81	1	33	0	42	NA	NA	NA	NA	2	157
Perforated Interval	0	1	NA	NA	9	33	10	48	NA	NA	NA	NA	19	82
Total Items Checked Per Category	100		100		100		100		100		40			

NE: Not Examined
NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

ROCK SPRINGS, WYOMING, DISTRICT OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	4	0	0	0
Unit files	12	0	0	1
Lease files	51	1	0	0
Lease rec. cards	51	7	0	0
Wells on base maps	238	10	2	
IWRs	238	1	0	0
P.I. cards	238	11	5	0

COMPARISON BY DATA SOURCE	OG Plats		T & R file		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	0	0	0	0	NA	NA	0	0			0	0

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	0	1	0	0	NA	NA	0	12			0	13

	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	0	1	NA	NA	2	0	0	0	0	7	2	8

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		M.J. Systems		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	0	0	10	0	1	5	11			5	22
Well Name/No.	0	0	0	10	0	1	0	11			0	22
Well Status	0	0	0	10	0	1	0	11			0	22
Prod. Interval Name	2	0	0	10	0	1	0	11			2	22
Perforated Interval	0	0	NA	NA	0	1	0	11			0	12
Total Items Checked Per Category	238				238		238					

NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

RAWLINS, WYOMING, DISTRICT OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	3	0	0	0
Unit files	3	0	0	0
Lease files	3	0	0	0
Lease rec. cards	3	0	3	0
ALMRS	3	0	1	0
Well jackets	129	25	8	0
Wells on base maps	129	7	15	0
IWRs	129	1	26	29
P.I. cards	129	65	24	3
M.J. Systems log fiche	129	9	42	15

COMPARISON BY DATA SOURCE	OG Plats		T & R file		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	0	0	0	0	0	0	0	0	0	0	0	0

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	0	0	0	0	NA	NA	0	0	0	0	0	0

	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	0	0	1	0	0	0	0	0	3	0	4	0

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		M.J. Systems		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Operator	8	0	NA	NA	23	5	21	60	32	46	84	111
Well Name/No.	0	0	1	34	5	5	20	60	10	46	36	145
Well Status	0	0	8	37	11	11	20	67	NA	NA	39	115
Prod. Interval Name	0	0	15	40	10	30	24	71	NA	NA	49	141
Perforated Interval	0	0	NA	NA	5	16	6	67	NA	NA	11	83
Total Items Checked Per Category	129		129		129		129		129			

NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

ROSWELL, NEW MEXICO, DISTRICT OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	10	0	0	0
Unit files	10	0	0	0
Lease files	20	0	6	20
Lease rec. cards	20	1	0	0
ALMRS	20	0	1	0
Well jackets	123	25	0	?
Wells on base maps	123	10	67	96
IWRs	123	13	45+	1
M.J. Systems log fiche	123	57	35	0
Prod. stats. report	123	23	0	0

COMPARISON BY DATA SOURCE	OG Plats		T & R file		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	0	0	10	0	4	0	5	0			19	0

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	0	0	1	5	0	0	0	0			1	5

	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	6	20	1	0	0	0	0	0	0	1	7	21

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		M.J. Systems		Production reports		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	0	1	106	14	13	NA	NA	26	57	0	23	41	199
Well Name/No.	0	0	40	16	37	13	NA	NA	35	57	0	23	112	109
Well Status	0	0	26	14	24	13	NA	NA	NA	NA	8	24	58	51
Prod. Interval Name	0	0			45	13	NA	NA	NA	NA	NA	NA	45	13
Perforated Interval	0	0	NA	NA	39	14	NA	NA	NA	NA	NA	NA	39	14
Total Items Checked Per Category	123		123		123		0		123		123			

NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

UTAH STATE OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	10	0	0	0
Unit files	10	0	0	0
CA files	10	0	0	0
Lease files	20	13	0	7
Serial Register Pages	8	5	5	0
ALMRS	8	1	4	8
Well jackets	36	29	0	2
Wells on base maps	100	1	15	10
Monthly rpt of operations	10	7	0	0
IWRs	100	45	4	4
P.I. cards	100	31	17	2
M.J. Systems log fiche	100	11	15	0

COMPARISON BY DATA SOURCE	KGS files		OG Plats		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	0	0	2	0	3	0	0	0	0	0	5	0

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	0	0	2	4	2	6	2	0	2	0	8	10

	Lease files		ALMRS		O & G base maps		OG plats		Serial Reg. Pages		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	0	13	4	9	NE	NE	NE	NE	5	5	7	26

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		M.J. Systems		Monthly Rpt. of Operations		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	29	2	13	0	45	3	31	15	11	0	7	20	136
Well Name/No.	0	29	3	1	0	45	3	31	4	11	0	7	10	124
Well Status	0	29	3	10	4	49	2	92	NA	NA	0	7	9	187
Prod. Interval Name	0	29	2	85	0	49	9	33	NA	NA	NA	NA	11	196
Perforated Interval	0	29	2	79	0	49	17	33	NA	NA	NA	NA	19	190
Total Items Checked Per Category	36		100		100		100		100		10			

NE: Not Examined
NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

TULSA, OKLAHOMA, DISTRICT OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	10	0	1	0
Unit files	10	0	1	1
Lease files	20	0	0	8
Lease rec. cards	20	0	6	0
Well jackets	108	49	0	0
Wells on base maps	108	0	0	57
P.I. cards	108	55	10	0
P.I. log micro film	108	88	1	0
Month reports of operations	6	3	4	0

COMPARISON BY DATA SOURCE	OG Plats		T & R file		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	NA	NA	1	0	1	0	1	0			3	0

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	1	1	NA	NA	NA	NA	0	0			1	0

	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	0	8	NA	NA	0	0	NA	NA	6	0	6	8

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		P.I. Logs		Monthly reports		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	0	0	108	NA	NA	2	55	1	88	2	3	5	254
Well Name/No.	0	0	0	53	NA	NA	0	55	0	88	0	3	6	199
Well Status	0	0	23	4	NA	NA	8	55	NA	NA	2	3	39	62
Prod. Interval Name	0	0	23	85	NA	NA	0	55	NA	NA	NA	NA	23	140
Perforated Interval	0	0	0	63	NA	NA	0	55	NA	NA	NA	NA	0	108
Total Items Checked Per Category	108		108				108		108		6			

NA: Not Available
E: Errors
O: Omissions

TABLE II

KEPLINGER TECHNOLOGY CONSULTANTS, INC.
DEPARTMENT OF THE INTERIOR/BUREAU OF LAND MANAGEMENT
CONTRACT NO. YA-5551-CT4-340087
TASK A: DATA BASE EVALUATION - SUMMARY OF DATA BASE COMPARISONS

WORLAND, WYOMING, DISTRICT OFFICE

ITEM SUMMARY	TOTAL ITEMS EXAMINED	ITEMS MISSING	ITEMS WITH ERRORS	ITEMS WITH OMISSIONS
KGS files	3	0	1	0
Unit files	4	0	0	0
Lease files	15	0	0	6
Lease rec. cards	15	0	2	0
ALMRS	10	1	4	1
Well jackets	138	2	2	0
Wells on base maps	137	2	51	9
IWRs	135	3	30	5
P.I. cards	133	32	40	8
M.J. Systems log fiche	40	2	11	2
Well status report	99	10	48	2

COMPARISON BY DATA SOURCE	OG Plats		T & R file		KGS notebook		O & G base maps		KGS index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
KGS Data	0	0	1	0	1	0	1	0			3	0

	Unit files		OG plats		Unit notebook		O & G base maps		Unit index map		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Unit Data	0	0	0	0	0	0	0	0			0	0

	Lease files		ALMRS		O & G base maps		OG plats		Lease record cards		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O
Lease Data	0	6	4	1	0	0	0	0	2	0	6	7

Well Data	Well jacket		O & G base maps		IWRs		P.I. cards		M.J. systems		Well status reports		Total count	
	E	O	E	O	E	O	E	O	E	O	E	O	E	O
Operator	0	2	14	11	48	3	2	41	1	22	40	8	105	87
Well Name/No.	2	2	5	4	1	4	0	41	0	2	2	7	10	60
Well Status	0	2	17	3	12	5	17	43	NA	NA	7	6	53	59
Prod. Interval Name	0	2	41	13	24	19	29	40	NA	NA	NA	NA	94	74
Perforated Interval	0	2	NA	NA	31	20	31	47	NA	NA	NA	NA	62	69
Total Items Checked Per Category	138		137		135		133		40		86			

NA: Not Available
E: Errors
O: Omissions